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## Aluminum Vies with Steel for Chairs

Manufacture of Furniture of Alloy Metal Put On  
Production Basis at the Buffalo Plant of  
United States Aluminum Co.

BY F. L. PRENTISS\*



**A**LUMINUM is now taking an important place with steel as a substitute for wood in the manufacture of office furniture as well as for the manufacture of chairs for other uses. With steel desks and cabinets and metal doors, sash and trim now being manufactured in considerable volume, the only field left for the metal fabricator to extend the use of his products in office furnishing and furniture seemed to be in chairs. The familiar wooden swivel and other types of wooden chairs are now facing the competition of aluminum chairs, an extensive line of which

was developed and recently put on a production basis by the Aluminum Co. of America through its manufacturing subsidiary, the United States Aluminum Co., at its Buffalo plant.

Advantages claimed for aluminum chairs are strength and lightness. At the same time they are attractive in appearance. Their weight is about one-half that of wooden chairs of the same general type and, as they are made of one of the strong aluminum alloys that has approximately the physical properties of mild steel, they are said to be practically indestructible, and they have no dowels to become loosened or joints to be reglued as in wooden chairs.

A complete line of office chairs in side types with straight and curved backs and arm chairs with plain and swivel bases

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**F**ORMING Back Frame of Aluminum Chair in Tube Bending Machine. The ease with which these operations are performed is an important factor in the commercial success of the development of aluminum furniture

is being made, as well as chairs for hotel dining rooms, restaurants, cafeterias and for railroad dining cars and for steamboats. Saving of motive power from reduction in weight and minimum of maintenance are factors which are said to have made the aluminum chairs popular with both rail and water transportation lines. The aeronautical industry is a promising field for aluminum chairs because of their lightness and strength. Chairs are now being made of aluminum for use on airplanes and other types are being developed. This line will include seat chairs for airplane pilots and navigators and cabin chairs for passengers. For dirigibles there will be chairs for pilots, navigators, also chairs for passengers, including lounging and bedroom chairs. In addition to chairs, other office accessories such as waste paper baskets and costumers are being made of aluminum.

### Aluminum Alloy 51-S Used Because of Good Forming Qualities

While several strong aluminum alloys are suitable for structural work, the one known as 51-S was selected for



furniture fabrication because of its good forming qualities and other general mechanical properties. As in steel, these mechanical properties can be changed by annealing, quenching and aging, permitting the fabricator to select metal which by heat treating can be suited to the requirements. This alloy in its annealed condition, designated as 51-SO, which is attained by heating to 662 deg. Fahr. followed by slow cooling, is very ductile and can be subjected to severe forming operations.

Cold working after annealing increases its strength, and this can be further increased by heat treating at 960 deg. Fahr. and quenching in water. The alloy subjected to these heat treatments, designated as 51-SW, is used for making aluminum furniture, being sufficiently ductile, if used within a few weeks after its manufacture, for most forming and bending operations, so that only the most severe deformation requires the use of annealed metal. After fabrication the aluminum is strengthened and stiffened at the expense of ductility by artificial aging. This is done by heating the metal at 320 deg. Fahr. for from 4 to 18 hr., the operation being carried on coincidentally with the baking of the enamel. The physical properties of the alloy after the treatments are:

Tensile strength (lb. per sq. in.) 45,000-50,000.  
Yield point (lb. per sq. in.) 30,000-40,000.  
Elongation (per cent in 2 in.) 10-18.  
Brinell hardness (10 mm. Ball 500 kg.) 85-100.

A large portion of the fabrication of aluminum chairs consists of forming parts in presses and brakes, and it is stated that the ease with which these operations are performed is an important factor in the commercial success of the development of aluminum furniture. Such parts as legs and back frames are made from uniform tubular sections, which are purchased in the form of seamless tubing. This is cut to required length with circular or band saws and given the proper curvature in dies operated by presses. Some back frames having curved corners with a 3 or 4-in. radius are formed in a special bending machine. Channel sections such as leg braces and seat frames are formed from sheet aluminum blanks bent into shape on a brake. Tapered legs are blanked out from sheet aluminum with dies and bent to the proper section and then welded along one seam. Parts requiring deeper drawing and more difficult forming are saddle shaped seats, swivel chair bases, etc., for arm chairs, and caster forks. Most of these are completely formed in two or three successive draws.

The formed parts are assembled into complete chairs by autogenous or gas welding. All joints are welded into

an integral whole except where the back frame joins the seat and in one or two other places where two flat surfaces come together. Here a mechanical joint of bolted construction is employed.

Problems involved in the welding of strong aluminum alloys had to be solved by the company's research engineer before one-piece aluminum chairs could be satisfactorily produced. These included the development of special welding wire, fluxes and baths and new methods of relieving strains set up in the welding operation as well

as in providing highly trained labor. Skill in applying the torch with the oxy-hydrogen flame and the control of temperatures are important matters of technique and when properly employed are said to result in welded joints which develop over 75 per cent of the ultimate strength of the metal.

The development of suitable metal jigs for the accurate assembly of parts has been given much attention. After being formed in dies or cut to size, the parts are first brought together for welding in sub-assembly jigs for back frames, leg braces, arms, seat frames, etc., and these are finally fitted into complete assembly jigs. The various parts are held firmly in position by clamps with lever or cam action, which allow a rapid fitting and removal after welding. All jig parts are made either of steel or cast iron, and every type of chair requires a separate jig. As a rule, the chairs are only tack welded while in the jigs, the welding being completed by separate



**C**HAIR Parts are Held in Jigs for Tack Welding During Assembly. All jig parts are made either of steel or cast iron, and every type of chair requires a separate jig

operators on the floor or bench. This allows a higher rate of production per jig. The use of very rigid jigs of this type permits the easy maintenance of the exact size and dimensions, so that all chairs of a given type are said to be exact counterparts of each other. Where smooth finished surfaces and fillet joints are required, the excess welding metal is taken off by rotating steel cutters and abrasive disks operated on portable flexible shaft machines. The final finishing operations are performed with fine carborundum cloth.

In a few places, where two flat surfaces coincide, they are bolted together as previously noted. This assembly is effected by inserting the large heads of the bolts in suitable slots in the leg tubing, where they are held in their proper place by coincident holes in the seat frame channel section. A special plate is fitted over the threaded ends of the bolts on which nuts and lock washers are tightened.

While some of the chairs have plain seats formed with dies from aluminum sheets, most types have leather up-

holstered seats, backs and arm pads, the trimmings being attached by concealed screws so that they can be removed for refinishing.

#### Casters and Swivel Devices Are Also Made of Aluminum

Casters and swivel devices, usually made of steel and brass, have been developed in aluminum for use on these chairs. The swivel device is made of strong aluminum alloy sheet, rod and extruded angles, usually in the same



gages as steel. The only steel parts in the device are two bolts with wing nuts. The use of aluminum has reduced the weight of the swivel from 12½ lb. to 6 lb.

Several types of casters made of strong aluminum alloy had been developed by the company in cooperation with caster manufacturers and these have withstood severe tests. One of these casters consists of a die formed fork of ¼-in. material attached to a stem of another strong alloy and fitted to the socket in the bottom of the chair leg by an aluminum adapter, also die formed. Any standard make of caster can be fitted to the chair by employing the proper adapter. The wheel is made of leather disks bound together by aluminum flanges. The wheel is fitted with a steel bushing, but the axle is made of heat-treated strong aluminum alloy. One popular type of caster has a rubber tired wheel and a ball bearing swivel.

Swivel chair bases have die-formed aluminum scuff plates to protect the paint from the wear of shoe heels. Metal being more resilient than wood, provision is made to deaden any resultant sounds on hard flooring. Straight chairs have combined gliders and silencers and swivel bases are partially filled with balsam wool to eliminate sound vibration in the legs or seats caused by the click of casters in their sockets.

#### Tests Have Failed to Develop Structural Weakness

Physical tests were selected during the development work to determine the ability of aluminum chairs to withstand the strains of service. They were given static tests to show the effect of the imposition of definite loads and dynamic tests in which they were subjected to a racking

similar to that which they receive in actual service. These tests, it is stated, have failed to develop structural weakness.

In order to give the chairs the most durable finish possible an investigation was made of various types of finishes from vitreous enamels and electrolytic deposits to air dried paints and lacquers. Vitreous enamels and color applied electrolytically were tabled, because of the high baking temperature required for the former and the thinness of the latter. The survey, it is stated, demonstrated the superior durability of paint enamels baked on at an elevated temperature and considerable time was spent in developing the technique of these proper applications. Before painting, the chairs are sandblasted so that the paint film will bind tightly to the material. In operating the sand blast, air pressure not exceeding 25 lb. is used and the blast is directed at rather an oblique angle. After sand-blasting the chairs are handled with clean cotton gloves to prevent contamination from grease or perspiration. The priming coat contains a long oil (China wood oil) varnish mixed with sufficient iron oxide or burnt umber to give it a decidedly dark color. This is sprayed on and dried for 2½ hr. in a baking oven maintained at 325 deg. Fahr. with thermostatic control. Even distribution of the heat is attained by the use of fans that circulate the air so effectively that the greatest variation of the temperature in the oven is only 12 deg. The priming and succeeding coats are lightly sand-papered



before adding more paint in order to assure good adhesion.

It was found that a little over 300 deg. Fahr. is the temperature best adapted to the dry-

ing of the baked priming and ground coats, and as this coincides with the aging temperature of the aluminum alloy, these operations are performed simultaneously. Physical tests also showed that the period of aging involved in the painting operation was just sufficient to impart the properties of stiffness and resilience to the chairs, so that they would withstand normal service conditions.

At present the chairs for the most part are given a wood grain finish, as users are accustomed to that finish in

**A**SEMBLY Welding of a Swivel Base While It Is Held in a Jig (At Left). Finish Welding of Chair Joints on a Bench (At Right)





**A**SSEMBLY of Seat and Back Frames. Formed parts are assembled into complete chairs by autogenous or gas welding. In a few places, where flat surfaces meet, a mechanical joint of bolted construction is used

wood furniture. The Von Webern plate graining process is employed to transfer to the chairs an exact photographic reproduction of the wood grain. Present equipment is restricted to walnut and mahogany plates and several different popular shades of brown and red baked enamels are used as ground coats. Two ground coats are successively sprayed directly on the priming coat, each being baked for 2½ hr.

The plate process for giving the metal a wood grain finish consists of transferring by means of printers' rollers the desired grain pattern from a copper plate upon which has been etched the exact photographic reproduction of the wood grain. The ink used in the printing process

is an especially prepared black varnish called graining compound. This is sprayed upon the copper plate by means of a roller and scraper, which leaves the compound only in the etched grain depressions. When the grain pattern has been imprinted upon the ground color, it is dried at approximately 150 deg. Fahr. for 3 or 4 hr., after which the metal is varnished as in varnishing wood.

In finishing the grained surfaces a baking varnish is used, which is selected to give a hard and tough coat when baked at between 200 and 300 deg. Fahr. for 2½ hr. Three coats of varnish are applied, the last one being rubbed with rottenstone and oil to produce a high grade satin finish. Baked varnishes were selected because tests, it is stated, showed that they were more durable than other types of clear finishes.

When grain finishes are not called for and high durability is of importance, baked enamel finish is used.



**S**URFACE Finishing of Chairs After Welding. A wood grain finish resembling walnut or mahogany is used



# Measuring Open-Hearth Yields

## Consideration of Various Forms of Losses and of Recovery of Scrap and Ingot Butts— Influence of Pig Iron Ratio

BY C. D. KING\*

**M**ISCELLANEOUS losses, as indicated in the Fe to Si ratio method for calculating ingot yields, are made up of iron lost in slag pocket accumulations, checker chamber dust and stack losses, free metallic iron in slag, loss due to  $\text{SiO}_2$  contributed by erosion of furnace structure, and non-recoverable pit spillage.

[These miscellaneous losses were developed at some length by the author, giving results of investigations made by several previous writers. Table V shows distribution of free metallic iron in the slags.]

The various Fe losses per unit of metallic charge, comprising miscellaneous losses, are made up as follows:

	Per Cent
As slag in slag pockets.....	0.20
As dust in checker chambers, waste gases, etc....	0.15
As free metallic Fe in slags.....	0.20
Due to erosion of furnace structure.....	0.09
Due to unrecoverable spillage—pit side.....	0.11
Total .....	0.75

From these empirical determinations, one can assume that every unit of the metallic charge suffers a loss of 0.75 per cent in the form of these miscellaneous losses. Obviously, differences should be allowed when comparing coke gas, natural gas and liquid-fuel-fired furnaces.

### Spillage, Oxides and Foreign Losses

In all reports on basic open-hearth yields, one is forced to assume that the hot metal, designated as consumed by the furnace, represents all that is actually received. This is far from true at plants where no provision is made for deduction of the kish or blast-furnace slag that may accompany the hot metal from blast furnaces to mixer.

If the kish has been deducted from the gross metal, even if estimated on the basis of occasional checks, then for practical purposes the reported net weight is sufficiently accurate. However, failure to account for kish, etc., is productive of possible serious errors in yield, particularly so on high hot metal charges. This will be better understood from the analysis of kish and the weights thereof per ton of metal. [Figures given showed a variation from 0.90 to 2.86 per cent of the hot metal existing as kish.]

If, as indicated, at least 1 per cent kish is part of the gross metal, and no consideration is given it, then, on a 50 per cent hot metal charge, the yield will show an error of at least 0.50 per cent. The yield in such cases will be fictitiously lower, and the cause for many apparent low yields may be found in this condition. If the kish is in greater amounts than 1 per cent, this situation will be intensified.

In transferring hot metal from the mixer to open-hearth furnaces some scrap is produced at the mixer

spout, as skulls in transfer ladles, and when pouring into furnaces. By far the largest part is produced as skulls. The amounts involved will vary at different plants, ranging as a rule from 0.20 to 1.00 per cent of the hot metal, the average being approximately 0.50 per cent. Unless it is practice to light-weigh ladles, an error in yield will obtain, proportionate to the amount of such iron scrap produced.

Such scrap is recovered and later prepared for either blast-furnace or open-hearth use. It therefore does not constitute an actual part of the charge which is normally shown against the furnace. For great accuracy, one should not consider elimination of metalloids on this portion of the hot metal. However, the error involved is small when such scrap amounts to 0.50 per cent or less. No provision is made for this factor in normal calculation, but where this scrap is greater and particularly on high metal charges of 50 per cent and over, it should be considered. Moreover, where this obtains, the high scrap production should be investigated.

### Spillage and Other Losses

In handling hot metal at mixer and to open-hearth furnaces, mechanical losses in the form of shot, spittings and splashings occur, which can be accounted for only by "difference"—total metal (hot) received, less that charged to open-hearth furnaces—the difference being made up of scrap and losses. These losses, together with those which occur in the mixer, normally amount to 0.50 per cent of hot metal. Therefore, in the consideration of losses on hot metal, this factor is applied. While such losses would be slightly lower for plants which can charge the desired hot metal in one ladle than for those which require more than one ladle, for practical purposes 0.50 per cent is used as standard in all cases. An exception is made only in the case of plants using large proportions of blown metal, as in basic duplex operations, which may require four or more ladles of such metal, in which case 0.80 per cent for spillage is allowed.

### Loss of Iron Due to $\text{SiO}_2$ and Si in Steel Scrap

In Table III, "Losses in Components of the Charge," a loss of 0.09 per cent appears against steel scrap due to Fe loss in slag based on Fe to Si ratio in slag. This is due to the loss of 1.85 Fe (ratio of Fe to Si in slag) for the 0.10 per cent  $\text{SiO}_2$  in steel scrap. A figure of 0.10 per cent is allowed arbitrarily, and an examination of conditions discloses this to be conservative.

For example, if 2 per cent of the total metallic charge is pit scrap, then on a 50 per cent scrap charge, pit scrap constitutes 4 per cent of the total scrap charge. If the pit scrap, even though carefully prepared at the skull cracker, contains as much as 10 per cent slag by weight, it is equal to 0.40 per cent slag on total scrap charge. If the slag analysis is approximately 15 per cent  $\text{SiO}_2$ , this is equal to a total of 0.06 per cent  $\text{SiO}_2$  on total scrap. Larger amounts will increase this proportionally. In view

\*United States Steel Corporation, New York. This is conclusion of abstract of a paper delivered Feb. 18, before the Iron and Steel Division of the American Institute of Mining and Metallurgical Engineers, at the annual meeting in the Engineering Societies Building, New York. The first section was published Feb. 28.

TABLE V—FREE METALLIC IRON IN BASIC OPEN-HEARTH SLAGS (PERCENTAGE)

Slag No.	Run-Off	Tapping	Ladle	Composite
1	0.85	0.30	2.67	1.25
2	0.77	0.99	5.97	2.50
3	0.88	0.91	1.55	1.95
4	1.00	0.82	2.71	2.14
5	...	...	...	3.63
6	...	...	...	1.60
7	...	...	...	0.40
8	...	...	...	4.86
9	2.46	1.45	0.87	2.20
10	...	0.60	0.80	0.65

TABLE VI—EFFICIENCIES OF ALLOYS AS DETERMINED BY VARIOUS AUTHORITIES

Test No.	Per Cent					
	Manga- nese	Sul- phur	Silicon	Chro- mium	Vana- dium	Molyb- denum Nickel
Test No. 1....	73.8	...	88.0	94.6	90.9	...
Test No. 2....	64.6	...	72.5	79.6	86.2	...
Test No. 3....	70.6	...	92.1	94.6	...	91.1
Test No. 4....	71.4	...	91.8	90.6	...	...
Test No. 5....	87.7	...	95.6	...	...	...
Test No. 6....	63.4	80.5	71.6	...	...	...
Test No. 7....	60.9	76.0	73.5	...	...	...
Test No. 8....	66.1	80.1	81.5	...	...	...
	79.0	...	...	65.9	...	87.8
	56.0	...	...	65.5	...	86.0
	66.0	...	...	70.1	...	...
	80.0	...	85.0	...	...	...
Plant average.	79.4	...	77.5	86.2	...	...
Plant average.	70.0	...	74.5	72.5	...	...
Plant average.	68.0	...	74.0	...	...	...

TABLE VII—VARIOUS TYPES OF MISCELLANEOUS SCRAP PRODUCED, IN PROPORTION TO METALLIC CHARGE

Plant No.	Pit Scrap	Per Cent			Total
		Iron Skulls	Steel Skulls		
1	2.97	0.21	0.25		3.43
2	2.51	0.28	0.12		2.91
3	2.76	0.43	0.28		3.47
4	1.70	0.30	0.62		2.62
5	3.12	0.59	0.25		3.96
6	2.73	0.41	0.25		3.39
7	2.97	0.56	0.25		3.78

TABLE VIII—COMPARISON OF YIELDS

	Per Cent				
	Kinney Yields	Difference Between Kinney and Suc- cessive Yields	Fe to Si Ratio Method	Difference Between Suc- cessive Yields	Fe to Si Ratio in Slag
Standard iron-low SiO <sub>2</sub> ore	91.04	...	89.89	...	1.73
High manganese iron-low SiO <sub>2</sub> ore	90.92	0.12	89.75	0.14	1.25
Standard iron-high SiO <sub>2</sub> ore	90.58	0.34	89.39	0.36	1.81
High-manganese iron-high SiO <sub>2</sub> ore	90.39	0.19	89.20	0.19	1.44
High-phosphorus iron	90.11	0.28	88.94	0.26	1.73
Excess limestone	89.76	0.35	88.63	0.31	2.63
High-silicon iron	88.20	1.56	87.02	1.61	2.04

of the large losses due to introduction of SiO<sub>2</sub>, a careful preparation of pit scrap is desirable, but the extent to which this should be carried remains for investigation.

In addition, dirt and sand will be found attached to many forms of light scrap and the poorer forms of market scrap. Therefore, assuming 0.10 per cent SiO<sub>2</sub> appears within reason, especially since many types of scrap contain silicon which in small amounts are not reported in analyses. Where silicon scrap of known analysis is charged, the Fe to Si ratio should be calculated accordingly. For the SiO<sub>2</sub> content assumed, and with the ratio of 1.85, the loss of Fe in slag per unit of steel scrap is  $0.10 \times 0.4667 \times 1.85 = 0.086$ , called 0.09 per cent.

#### Loss of Additions

Loss of additions, which refers to pure manganese, silicon, chromium, vanadium, etc., of the ferroalloys used, varies in practice depending on slag conditions, presence of other oxidizable elements, temperature, time allowed

for deoxidizing action and other factors. Any standard for efficiencies must necessarily be based on normal good practice.

Since manganese and silicon constitute the largest proportion of additions used, their influence is shown on the assumption of 75 per cent efficiency or 25 per cent loss. Where they represent a smaller part of the total alloys, adjustments are necessary on this standard. The figures in Table VI indicate efficiencies for various alloys under a variety of conditions, the efficiencies referring to the pure metallic manganese, etc.

#### Net Losses

Foregoing is an explanation of the character of the losses and the factors used in accounting for them. As previously indicated, it is necessary only to multiply these by the percentage of the material used in the metallic charge, after considering the analysis of the metallic and non-metallic material going into the furnace. If the blast

TABLE IX—LOSSES IN COMPONENTS OF BASIC OPEN-HEARTH CHARGE (DUPLEX OPERATIONS)

Type Losses, Per Cent	Blown Metal	Cold Iron	Hot Metal	Steel Scrap	Lime- stone	Dolo- mite	Spar
Metalloid losses:							
Carbon	+0.04	4.12	4.12	0.07	...	...	...
Silicon	...	1.30	1.30	...	...	...	...
Manganese	+0.05	0.65	0.65	0.28	...	...	...
Phosphorus	0.16	0.15	0.15	...	...	...	...
Iron loss in slag (Fe to Si ratio)	...	4.17	4.17	0.15	1.51	3.00	7.35
Spillage, oxides, foreign	...	...	...	...	...	...	...
losses	0.80	...	0.50	0.40	...	...	...
Miscellaneous losses	0.75	0.75	0.75	0.75	...	...	...
Total losses..	1.62	11.14	11.64	1.65	1.51	3.00	7.35

TABLE XI—PRACTICE DATA FOR DUPLEX OPERATIONS

Blown metal, per cent....	60	65	70	75	80	85
Open-hearth (only) yield...	92.95	93.10	93.25	93.40	93.55	93.70
Total scrap.....	3.00	3.00	3.00	3.00	3.00	3.00
Total loss.....	4.05	3.90	3.75	3.60	3.45	3.30
Duplex yield.....	87.25	86.92	86.60	86.27	85.95	85.62
Fe in slag, shot, etc. (Bes- semer)	0.66	0.72	0.77	0.82	0.88	0.93
Miscellaneous scrap (Bes- semer)	0.66	0.72	0.77	0.82	0.88	0.93
Open-hearth miscellaneous scrap	2.00	2.00	2.00	2.00	2.00	2.00
Open hearth condemned in- gots and butts.....	1.00	1.00	1.00	1.00	1.00	1.00
Total scrap.....	4.32	4.44	4.54	4.64	4.76	4.86
Total loss.....	8.43	8.64	8.86	9.09	9.29	9.52

TABLE X—CALCULATIONS OF BASIC OPEN-HEARTH YIELDS (DUPLEX OPERATIONS)

Materials	Percentage of Materials Used per Ton Metallic Charge	Losses in Charge Com- ponents	Percentage of Loss per Ton of Total Metallic Charge
Blown metal	80.0	1.62	1.296
Hot metal	12.0	11.64	1.400
Cold iron	3.3	11.14	0.368
Steel scrap	4.0	1.65	0.066
Additions	0.7	25.00	0.175
Total metallic charge.	100.0		3.305
Limestone	5.55	1.51	0.046
Dolomite	1.53	3.00	0.084
Fluorspar	0.15	7.35	0.011
Total losses			3.446
Less metallic recovered in slag.....			(a)
Net losses			3.45
Scrap recovered: Miscellaneous scrap.....			2.00
Condemned ingots and ingot butts.....			1.00
Metallics in slag.....			(b)
Total scrap			3.00
Total net loss and scrap.....			6.45
Ingot yield			93.55
Total			100.00

(a) and (b) Compensate for each other.

TABLE XII—PRACTICE DATA FOR STATIONARY OPEN-HEARTH FURNACES

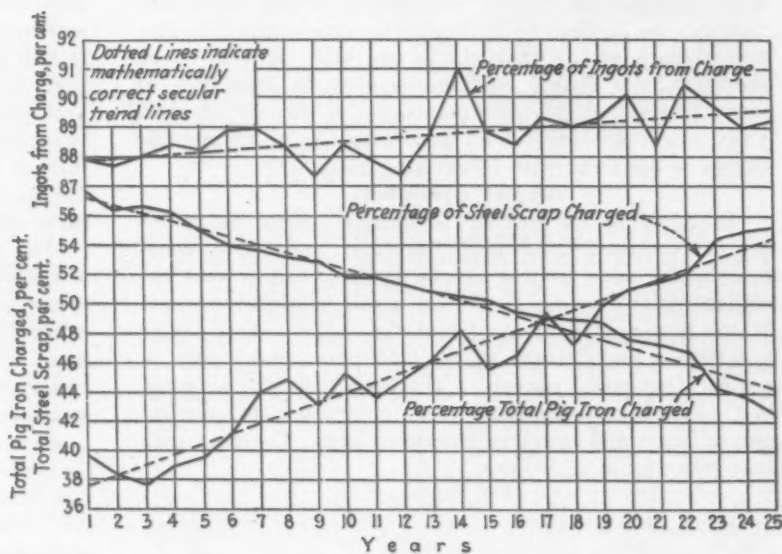
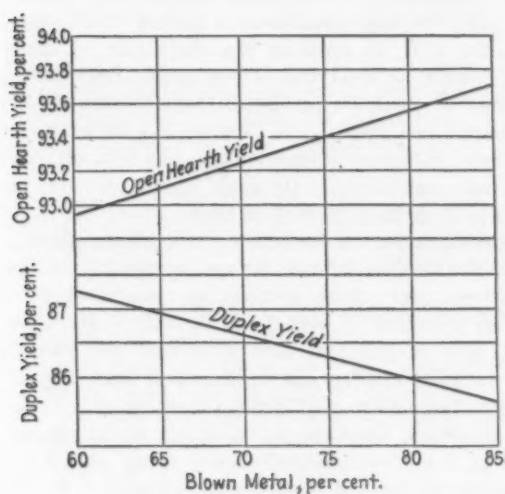
Pig Iron, Per Cent	40.4	46.6	53.1	57.5
Yield, per cent.....	90.82	90.04	88.96	88.27
Scrap, per cent.....	3.95	3.98	4.02	4.04
Loss, per cent.....	5.23	5.98	7.02	7.69

furnaces consume some part of the open-hearth slag, the metallics thereof are credited to the open-hearth and thus regarded as a scrap credit, the percentage to be deducted from total losses being the amounts used per ton of metallic charge, with due regard for the metallic contents. The latter is usually a set figure for any plant, based on the average analysis of such slags.

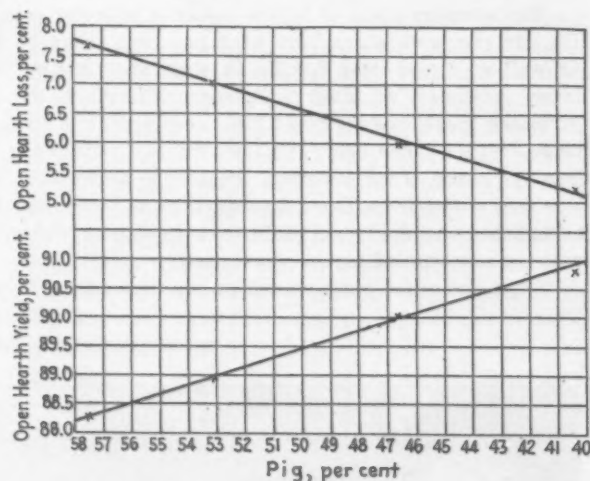
For example, if a plant produce 15 per cent slag based on metallic charge, and the total metallics including included shot are 27 per cent, and the blast furnaces find it convenient to use about one-third of the total slag produced, there results a credit of 5 per cent  $\times$  27 per

periods of time. Since cold iron plants would show no credit for iron skulls, etc., miscellaneous scrap for such plants is proportionally lower.

For hot-metal plants it appears that an aggregate of 3 per cent miscellaneous scrap can be used for a standard. This would infer good practice. Higher percentages appear deserving of investigation. Cold iron plants should be rated lower, proportionate to difference in iron scrap produced for equal percentages of pig iron. When dealing in percentages of materials, amounts actually involved over a period of a month or a year are usually not apparent. For example, were a 50,000-ton plant produc-



**INGOT Yield in Duplex Basic Open-Hearth Practice, with Varying Proportions of Blown Metal, Is Shown in Fig. 1 (upper left). Characteristic basic open-hearth yields with varying percentages of pig iron in the charge are shown in Fig. 2 (upper right), taken from many years of experience under all conditions. Fig. 3, lower right, indicates basic open-hearth yields, all other things being equal, as affected by differing proportions of pig iron used**



cent = 1.35 per cent of the metallic charge, which should be deducted from the total losses to give net losses.

#### Miscellaneous Scrap

In addition to credit for scrap in the form of open-hearth slag recovered in blast furnaces, miscellaneous scrap, ingot butts and condemned ingots constitute part of the scrap recovery. Miscellaneous scrap includes iron scrap, pit scrap, steel skulls, mold splashings, etc. By far the largest part is contributed by pit scrap, which usually amounts to 60 to 85 per cent of the total.

#### Pit Scrap

Production of pit scrap varies considerably. Table VII gives typical pit scrap production per ton of metallic charge for several hot-metal plants. These figures cover long

ing 0.50 per cent higher than such a standard, this is the equivalent of approximately 250 tons times the yield or, roughly, 225 tons. By careful drainage of furnaces and the use of ladles sufficiently large to take care of over-charged furnaces, one can increase the ingot yield by decreasing scrap production.

It is interesting to note further how losses in converting pit scrap for use may occur. Assume that 1000 tons of pit scrap is sent from the open-hearth to the skull cracker, which will be considered at 85 per cent metallic content. In preparing this material, handling, etc., as much as 10 per cent loss may occur, so there is available to the open-hearth approximately 900 tons at 85 per cent, or 765 tons. In other words, there is a loss of 85 tons of steel, or the equivalent of about 0.30 per cent on the total metallic charge. This loss will naturally vary with the



quantity and kind of pit scrap produced and with the care with which it is handled at the drop.

#### Condemned Ingots and Ingot Butts

Condemned ingots at most plants are largely a question of rigidity of physical and chemical specifications. They will vary considerably from plant to plant, depending largely on the type of steel made, the tolerance in specifications and the standards of inspection for quality. An average total of ingots and butts at well-conducted plants amounts usually to 1 per cent of metallic charge. Inspection of molds, careful pouring and care in producing steel, to come within chemical specifications, can assist materially in keeping such scrap within that figure.

Ingot butts are largely dependent on the minimum size ingot that can be rolled. The length of the ingot butt that can be handled by rolling mills determines this factor. Where plants are held to one size ingot or mold, there is little chance for improvement in this type of scrap production. Where plants use a variety of mold sizes, a greater ingot butt percentage to total metallic charge is apparent with larger size molds.

#### Duplex Operations

In applying the method to duplex operations, which are a combination of acid Bessemer and basic open-hearth, the same system can be applied, except that the spillage allowance on the blown metal is higher because of the increased number of transfer ladles. This factor is 0.80 per cent instead of the 0.50 per cent allowed on ordinary hot-metal charges. The metal used for blowing, in the following comparison, is a combination of low-manganese basic and standard Bessemer iron. The Bessemer slag resulting is as follows:

Per Cent						
FeO	Fe <sub>2</sub> O <sub>3</sub>	MnO	SiO <sub>2</sub>	CaO	MgO	Al <sub>2</sub> O <sub>3</sub> and TiO <sub>2</sub>
16.00	2.03	14.62	61.40	0.72	0.75	3.72

The average yield of blown metal is 91.3 per cent, and for our purposes a recovery of 1 per cent scrap is made, as well as 1 per cent for Fe in slag, shot and spittings later consumed at blast furnaces. Therefore, on basis of blown metal the scrap is 1.1 per cent and Fe in slag, spittings, etc., 1.1 per cent, the loss 7.3 per cent, or a total loss and scrap of 9.5 per cent. While the amounts in practice may differ from these figures, they nevertheless serve to indicate the degree of difference in duplex yields with varying amounts of blown metal used.

Since the same characteristics are desired in the slag,

one can readily calculate the yields obtained in the open-hearth department (only), as well as the combination or duplex yield. The losses and scrap for open-hearth are figured and to this the losses and scrap per ton blown metal are added. Since none of the open-hearth slag is consumed in blast furnaces, the credit is nil, but the total scrap will include the amount of Fe in slag, spittings, etc., credited to Bessemer, and in proportion to the percentage of blown metal used. The basis used is 80 per cent blown metal, the remainder being hot metal, cold iron, scrap, etc.

#### Influence of Proportion of Pig Iron Charges on Ingot Yields

Fig. 3 is a characteristic curve showing the performance of one stationary open-hearth plant with varying amounts of pig iron and scrap over a period of 25 years. It will be noted that, in spite of the multitude of variations possible, such as analyses of materials, overloading furnaces, types of steel, etc., a definite relation exists between pig charge and yield. Such curves can be extended further to show influence of percentage pig iron charged for more equal conditions. In such a comparison the curve will have a definite aspect or trend.

Fig. 4 represents such a condition. "Equal conditions," in the sense in which used here, refers to the lack of extreme variations over short periods as compared to a curve (Fig. 3) covering a period of 25 years. It represents actual slag proportions and analyses, analysis of materials in metallic charge and proportions used per ton metallic charge for a period of about three months.

It is assumed that for a 50 per cent hot metal charge, the standard of 3 per cent miscellaneous scrap and 1 per cent condemned ingots and ingot butts obtains. Therefore, the miscellaneous scrap for lower or higher percentages used is adjusted to take care of standard of 0.50 per cent iron scrap produced per ton hot metal. The curve demonstrates clearly the influence of percentage pig charges on yields for "equal conditions." The same study can be employed to denote possible yields for any steel with varying pig charges, or same charge for different steels.

Table XII shows the practice obtaining for various pig percentages. The calculations are made in the usual manner for Fe to Si slag ratio, etc.

[Consideration of slags, going into molecular analysis and the basicity ratio, concluded the paper.]



### Colonel Lindbergh's Traveling Office

INTERIOR of special tri-motored Ford transport\* "City of Columbus," used as a traveling office by Col. Charles A. Lindbergh and Major Thomas G. Lanphier. Special equipment includes stenographer's desk, typewriter and minor office appliances, two built-in berths and a refrigerator. Preliminary ground lay-out work incidental to establishment of airports along the route of the proposed transcontinental rail-and-plane service is the first purpose to which the office plane was devoted. Transcontinental Air Transport, Inc., is cooperating with the Pennsylvania Railroad and the Santa Fe Railroad to organize a rail-and-air route to cut the running time between New York and Los Angeles to less than 48 hr. Ten tri-motored transports have been ordered by the Pennsylvania Railroad for use in this service.

\*See THE IRON AGE of Jan. 31, page 327, and Feb. 7, page 401, for description of methods of manufacture.

# Redesign for Production Welding

Methods Outlined Whereby the Process Can  
Be Instituted by Manufacturers  
of Machinery or Metal  
Products

BY J. F. LINCOLN\*

**R**EDESIGN from cast iron to welded steel is one problem that perplexes the uninitiated. The difficulties expected by them usually are among the following:

1. The best place to start.
2. It may cause an upheaval in the factory organization.
3. Our customers may not like it, and stop being customers.
4. It may mean much expense for new machinery and scrapping of old.
5. Our engineers are not accustomed to the process and may go wrong in design.
6. We have no one who can weld, supervise the welding operation, and judge the quality of the work.
7. We don't believe we can save money anyway.
8. We will start when others have succeeded in it.
9. We have tried it all out and the promised savings have not materialized.

The hardest of all objections to handle are the last two. The manufacturer who says that he will do it when others are successful, or the one who excuses himself by saying that he has looked into it and from his small

\*Vice-president, Lincoln Electric Co., Cleveland.



**S**TEEL Frame Work for Punch Press, Made by Arc Welding. This is considerably lighter than the casting formerly employed, although it is stiffer and much tougher



End Bracket for Electric Motor Built from Standard Structural Steel Shapes and Tubing

knowledge can safely say that there is nothing in it except propaganda, closes his mind. This is always dangerous. It is an unfortunate fact that competition is no respecter of persons. The manufacturer who cannot meet it disappears in these days of rapidly changing methods. If he does not do a better job than his competitor he cannot succeed. Therefore, the successful executive cannot depend on the development that is done by his competitor for his shop practice. The process that succeeds for his competitor will not do for him—he must get there first.

It may be of help to cite the experience of the Lincoln Electric Co., which started to develop and redesign for welding as far back as 1907. It is safe to say that if our rather complicated electrical apparatus can be redesigned economically and successfully, any other line of equipment which is inherently easier will yield to the same treatment without difficulty and at even greater profit.

The first essential to successful redesign in arc welding is the desire to do it. I know of no process that will result in an equivalent profit without some necessity of both faith and backbone in the manufacturer using it.

After the decision has been made to use this method, the easiest place to begin can be determined by a survey of the manufacturing processes and the application of engineering ability. The following points should be borne in mind in selecting the starting point:

- (a) Select some part that can be made without any complicated forming devices.
- (b) Select some part that is not of greatest operative importance so that an error will not be a disaster.
- (c) Select some part that may be giving trouble as made by present cast or riveted methods.

Experience shows that the great danger, once the start is made, is that the organization will go too fast—the men will want to weld everything immediately rather than work out the economics and best design for each part.

The application of welding to manufacture involves more than buying a new production tool; it means developing a new manufacturing process, and it should be approached in the same spirit as other fundamental changes have been approached. High-speed tool steel was of comparatively small importance until new machine tools and new standards of practice were made available. Alloy steel in manufacturing is of small importance unless the design and heat treatment is changed to take advantage of its high qualities. In the same way if arc welded steel is to be used the more accurate design possible and the greater utility of steel can only be of benefit if the design

is modified to take full advantage of these inherent virtues of steel.

It may seem to those of small welding experience that there are no fundamental principles involved in the redesign of parts to welded construction. There is, however, a good deal of help which can be obtained by classifying all products under three simple heads—these are bases, containers, and covers. All machinery and all parts of machinery can be subdivided into these classifications, and for the purpose of thinking in terms of welding, it is considerably easier to think of parts subdivided into these



THE Only Bolts or Rivets in This Steam Shovel Bucket Are on the Teeth, Which Are Removed at Intervals for Sharpening (above)

LATTICED Derrick Boom (At Right) With all Connections Welded



classes, than to think of them as individual parts without relation.

#### Bases

Bases cover probably more than 60 per cent of all structures, a base in this connection being any part which is used to resist bending. This would include in its simplest form the base for a motor generator set, or a motor driven blower. It would also include a lathe bed, a bridge, or the steel work for a house or factory. The same rules would apply to the redesign of all of these parts which have the function of resistance to bending.

#### Containers

The second classification is a great deal simpler. Any part which is made to hold pressure, or liquids, or solids, is a container. Examples of this would be boilers, air receivers, engine cylinders, storage tanks, pipe, and kindred structures. The same rules which apply to the manufacture by arc welding of any one of these will also apply to all of them.

#### Covers

The third classification is still more simple. Any part which has for its function the protection of parts against

the weather, or against objects dropping on it, such as gear guards and similar parts, can be thought of as a cover.

#### Redesign of Bases

Bases are the largest single class, so we will consider them first. Since cast iron has a modulus of elasticity about 40 per cent that of steel, the same stiffness in steel can be attained with only 40 per cent of amount of material. Generally, it is possible to design the base so that the metal is placed in the redesigned structure much more efficiently than in the cast structure. For instance, an I-beam is the best shape in which to dispose metal in order to resist bending, but this shape cannot be used in the usual cast base because the pattern cannot be drawn from the sand. However, it can be easily used in the welded base.

Brief study will show that most cast structures are the result of experience only, and have little to do with accurate design. When the first castings are made shrinkage cracks may develop, or the draft of the pattern needs to be changed for easy molding. Perhaps the casting will warp out of shape when machined. All these occurrences necessitate modification of the pattern and usually produce a heavier casting. After all these changes have been made and the design has been finally approved, by practice, the final shape and cost are different from a design based purely on the engineering requirements of the job.

The designer should therefore, in redesigning a base for welded steel, first of all determine the loads that it

must carry, and, second, what deflection it is possible to allow safely. With this information he can design with accuracy and with assurance that the finished product will check with his figures. There will be no unknown variables, therefore accurate design is obtainable. This frequently means a tremendous saving in itself.

#### Redesign of Containers

If the controlling factor is merely the strength of a cast iron container to resist pressure, then redesign is simple. Steel can be figured for strength very much more accurately and confidently than can cast iron. The relative strength is about in the ratio of 5 to 1. If the structure previously has been riveted steel, the design of the new welded structure should be made in such a way that the greater strength of the welded joint will be utilized. Since a 100 per cent joint can be made by proper welding and is, of course, impossible with any type of riveted joint, this difference in joint strength will cut down the needed amount of material by from 20 to 50 per cent. Very frequently, however, the effect of corrosion, required stiffness, or other factors may enter into the design.

With any proper welding process satisfactory results will be obtained. Automatic welding both for the longi-



tudinal seam and for the head seams should be used if many containers are to be made, because of lower cost and greater reliability. Instead of making large containers of ring sections welded together, it is preferable to use longitudinal seams running the length of the container.

#### Redesign of Covers

In making covers, the problem is merely to get the proper stiffness either from inherently stiff sections, or else by welding on stiffeners. However, the shape and appearance of such things as gear guards and lathe bed pans are of more importance than cost; for that reason the design may entirely leave the realm of engineering.

#### Frequent Errors

When errors are made in adopting the new method, they usually are among the following:

1. Delay in getting started to use the process.
2. Going too fast and without proper design, equipment and training.
3. Buying steel from warehouse cut to size instead of from the mill in car lots with a plan that will use it properly.
4. Attempting to make the new part look like the old one. Remember, if the old part were right it would not be necessary to change it.
5. Getting frightened when the new design, properly engineered, looks light and spindly.
6. Lack of proper engineering.

7. Having no accurate cost system to show the difference in cost of comparative designs.

8. Trying to use improper size or type of welding equipment, or improper technique, usually the result of insufficient capacity of machine or too small electrodes.

9. The belief that because the plant has a foundry, castings cost much less than when bought outside.

10. The belief that if the volume is not kept up in the foundry, money will be lost regardless of other costs.

The best machine for any purpose has never been made without change for very long. This conclusion is safe unless all engineering history is wrong and all progress has stopped. For that reason the only safe policy for any manufacturing executive is to lead in the developments. There has yet to be a case where the laggard has had a long and prosperous life.

Arc welding is not a panacea for all troubles, but it is a manufacturing process that I believe will eventually eliminate 85 per cent of all castings and forgings and 100 per cent of the rivets. This substitution will be forced on all manufacturers, because the change results in a saving which will usually exceed 25 per cent of the previous cost of the part redesigned. At first much of this saving can be pocketed by the manufacturer who applies this method. Soon, however, this advantage will disappear because of competition; the new method will be necessary if other manufacturers are to stay in his field at all.

## Standardization Means Cultural Renaissance

Does Not Bring About Stereotyped Living Conditions, Says Conference Board—Places Emphasis on Marketing

**I**NDUSTRIAL standardization has been a paramount factor in the recent economic progress of the United States, and "cumulative evidence points unmistakably to the conclusion that it is one of the most significant and far-reaching methods for increasing industrial efficiency to the benefit, if properly used, of all interests concerned."

"Tangible and trustworthy facts regarding the achievements and economies of standardization," however, "are few and far between," and "it is clear that the achievements in the past are but guide posts to possibilities in the future."

Such, in brief, is the summing up by the National Industrial Conference Board, New York, of its findings of a study of the industrial standardization movement and its effects upon economic life. However, although the board indicates certain reservations in evaluating the ultimate economic effects of standardization, it nevertheless is inclined to attribute great potential value to the effects of standardization upon social and cultural progress, provided the evidence found in support of the net economic benefits of the movement should prove conclusive. Quite contrary to popular impression in many quarters, that standardized consumers' goods and standardization in industrial and commercial methods tends to develop stereotyped living conditions and habits, the board declares that "if the machine (through standardization and mass production) is able to democratize leisure, it may be opening up the way for the greatest cultural renaissance in the history of the world."

Standardization, the report points out, means many

things besides the mere standardizing of product as to size, quality, design or of methods and procedure in the productive process proper. It is applied in increasing degree to the functions of business procedure in all its branches, as in purchasing specifications, in distribution methods, transporting and handling, clerical work, finance and communication, always with the immediate aim of economizing material, effort and time. "So pervasive is the application of the principle that . . . we have failed to appreciate its significance, the extent and manner by which it is being systematically advanced, its relation to industry, to government and to the public, and the problems to which it has given rise."

"Standardization should be regarded as a tool, a method, a device or a technique for achieving certain ends," the Conference Board declares in the concluding chapter of its study. Whether or not advantages outweigh disadvantages is found to depend entirely upon what use is made of standardization, as it may retard as well as promote industrial progress. In practice, judgment as to particular standardization projects or as to standardization in general must rest upon a satisfactory answer to the following three questions, the board declares:

1. Does standardization have the effect of forwarding scientific improvement of processes, techniques and equipment?
2. Does standardization make possible a higher average standard of living?
3. Does standardization relegate problems already

solved to their proper place, the field of routine, leaving creative faculties free for the problems still to be solved?

### Has No Stereotyping Effects

For evidence that the standardization movement in the United States is successfully avoiding the stereotyping effect of standardization, the board points to the fact that

America's large industrial organizations which are most active in the field of standardization also are the ones which maintain the most active and progressive scientific research laboratories and constantly evolve new processes and commodities and cooperate most actively with the various private and official bureaus in evolving new standards.

## Curves for Computing S

FROM a study of the physical properties of 50 or more special melts, and an analysis of other publications on complex brasses, O. W. Ellis, research department Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., has been able to determine the approximate effect of each of several alloying elements. The diagrams reproduced herewith are taken from his paper entitled "High-Strength Brasses," read before the Institute of Metals, New York, Feb. 20. His alloys were cast at 1000 deg. C. into an open-top chill, and the resulting ingot, approximately 4 x 3 x 3 in., machined into a test piece. Nearly all of Ellis' alloys analyzed copper close to 57 per cent; variations occurred in the other constituents. Some speakers criticized this practice, pointing out that the copper should change with other elements in order to maintain a proper "balance." However, a group of 15 special alloys was

analyzed and their physical properties computed from the curves, and then compared with the actual values found in the tensile test. The average error in the computed strength was 1600 lb., and the average error in computed elongation was 2.3 per cent.

As an example of the use of these curves one may take an alloy containing: Copper, 51.95 per cent; iron, 3.82 per cent; aluminum, 1.88 per cent; manganese, 0.98 per cent.

Fig. 1 shows that the strength of a simple brass containing 51.95 per cent copper is about 72,700 lb. per sq. in.; Fig. 3 shows that 3.82 per cent iron reduces the strength of such a brass on the average by about 6000 lb. per sq. in.; Fig. 5 shows that 1.88 per cent aluminum raises the strength by about 26,000 lb. per sq. in. (average) and Fig. 7 shows that 0.98 per cent manganese increases the

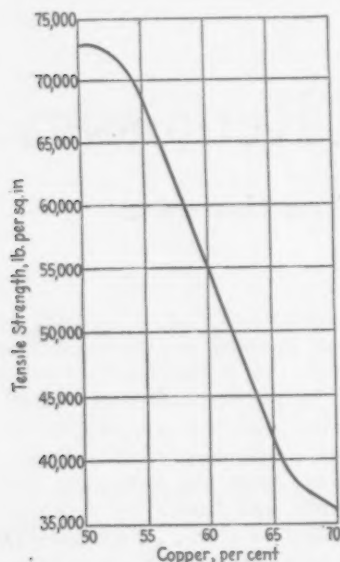


Fig. 1—Effect of Copper on Tensile Strength of Simple Brass

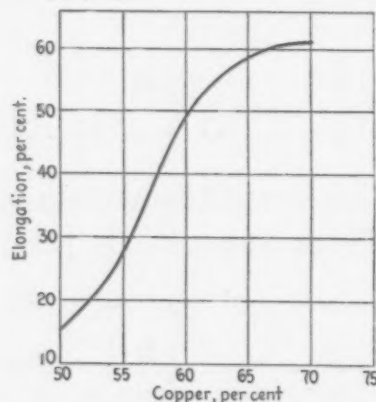


Fig. 2—Effect of Copper on Percentage Elongation of Simple Brass

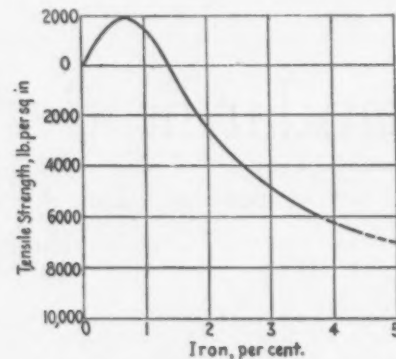


Fig. 3—Quantitative Effect of Iron on Tensile Strength of Complex Brass

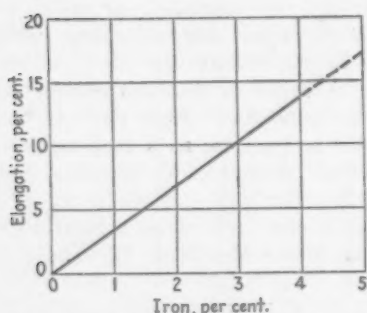


Fig. 4—Quantitative Effect of Iron on Percentage Elongation of Complex Brass

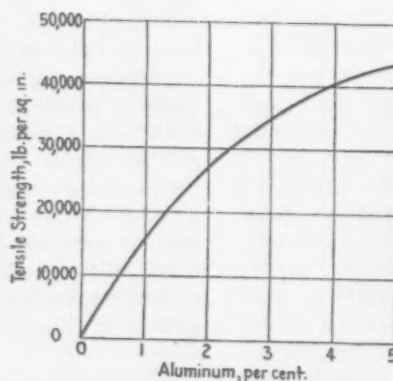


Fig. 5—Quantitative Effect of Aluminum on Tensile Strength of Complex Brass

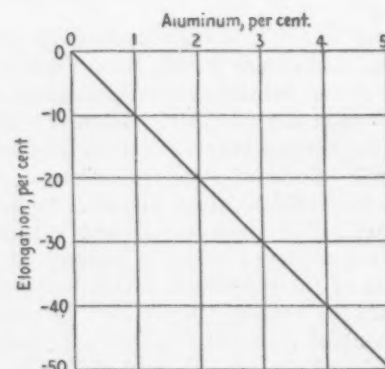


Fig. 6—Quantitative Effect of Aluminum on Percentage Elongation of Complex Brass

The board study takes into account the fact that standardization of product, through its inseparable concomitant, mass production at lessened production cost, has shifted the major industrial problem away from production to marketing, with the net effect that the ratio of marketing costs to production costs is steadily increasing.

This creates a situation which in part offsets the advantage of standardization itself, but, the board believes, may in part be remedied by simplifying and systematizing marketing technique. "To the extent that simplification of the channels of distribution may handle this difficulty, standardization can be used to raise still further the purchasing power of the daily wage."

## Strength of Complex Brasses

strength by about 1400 lb. per sq. in. (average). The estimated strength for this alloy will be:

	Lb. per Sq. In.
Strength of simple brass.....	72,700
Increase due to Al.....	26,000
Increase due to Mn.....	1,400
	<hr/>
Decrease due to Fe.....	100,100
	<hr/>
Estimated tensile strength.....	94,100

The actual strength of this alloy (chill-cast) as obtained by test was 92,200 lb. per sq. in.; i. e., the estimate of strength is only 2 per cent too high.

As to percentage elongation, following are the values:

	Per Cent in 2 In.
Elongation of simple brass.....	19 (Fig. 2)
Increase due to Fe.....	13 (Fig. 4)
Increase due to Mn.....	5 (Fig. 8)
	<hr/>
Decrease due to Al.....	37
	<hr/>
Estimated elongation.....	20 (Fig. 6)
	<hr/>
	17

The actual elongation of this alloy (chill-cast) was 18.5 per cent.

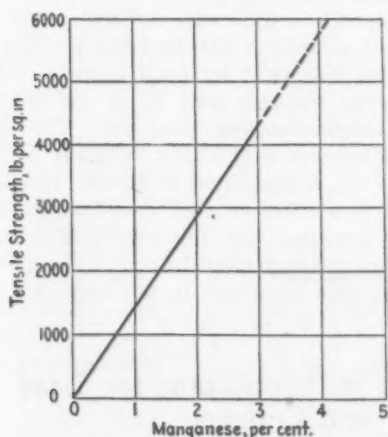


Fig. 7—Quantitative Effect of Manganese on Tensile Strength of Complex Brass

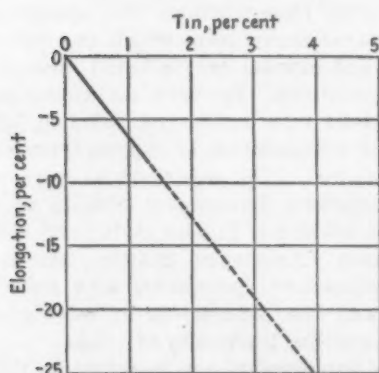


Fig. 10—Approximate Quantitative Effect of Tin on Percentage Elongation of Complex Brass

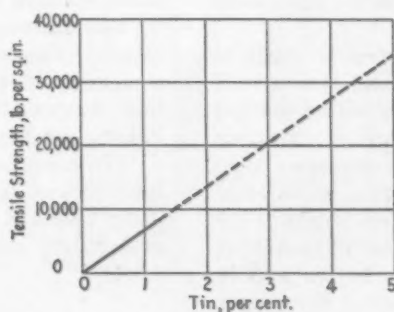


Fig. 9—Approximate Quantitative Effect of Tin on Tensile Strength of Complex Brass

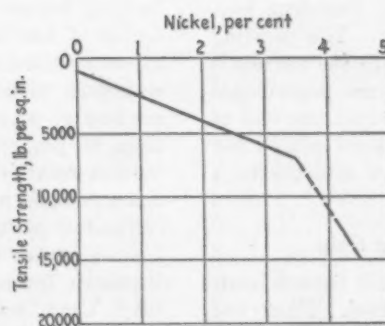


Fig. 11—Approximate Quantitative Effect of Nickel on Tensile Strength of Complex Brass

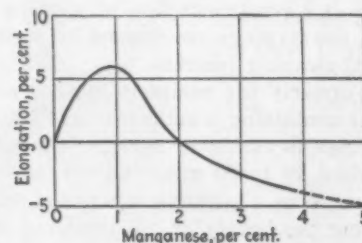


Fig. 8—Quantitative Effect of Manganese on Percentage Elongation of Complex Brass

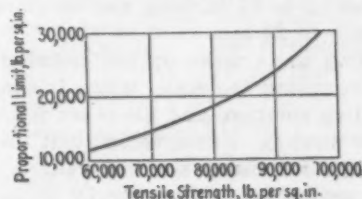


Fig. 12—Relationship Between Proportional Limit and Tensile Strength of Brass

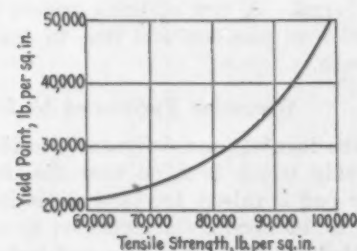
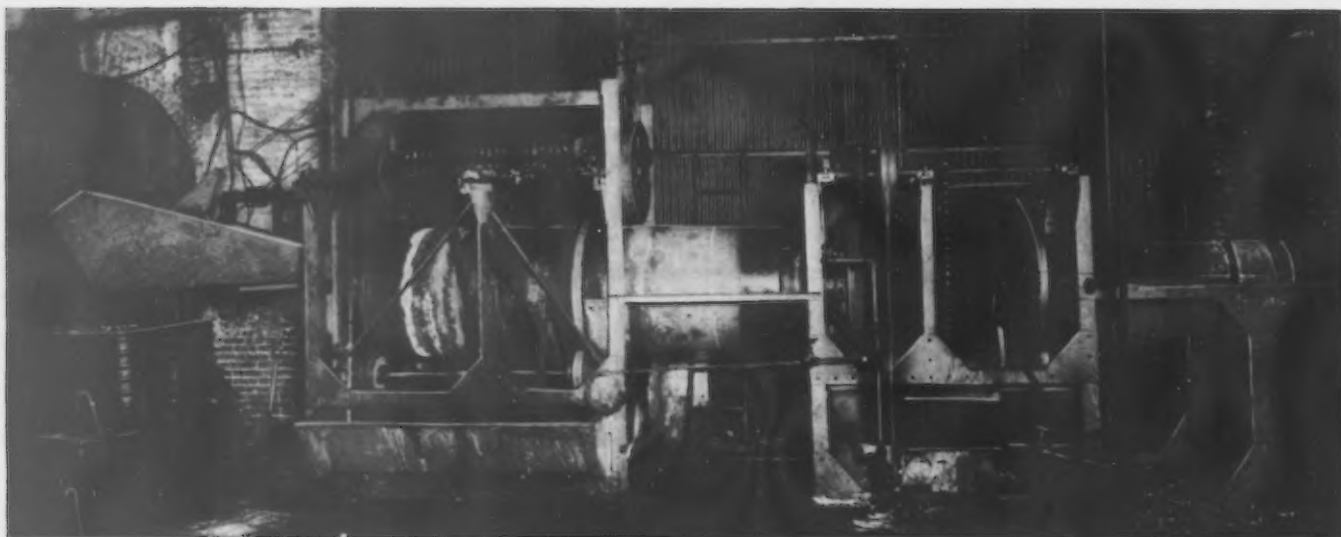


Fig. 13—Relationship Between Yield Point and Tensile Strength of Brass





## Cleaning Forgings in Shortened Time

Pickling and Tumbling Combined in One Barrel, Followed  
by Soda Cleansing in the Second

**R**EDUCING by 30 to 40 min. the time required for cleaning drop forgings is reported by the Cleveland Hardware Co., Cleveland, through the adoption of a continuous process combining tumbling and pickling. The forgings are tumbled in a barrel through which there is a continuous flow of pickling solution. After pickling, the forgings are cleaned by washing in the continuous metal cleaning machine.

Formerly the company cleaned alloy steel forgings in tanks containing a sulphuric acid solution and carbon steel forgings in tumbling barrels. Cleaning by either method required 40 to 50 min. By the new method of agitating the work in a pickling compound, and at the same time getting the benefit of the tumbling operation, small alloy steel forgings are being cleaned in as short a time as 5 min. The time now required for cleaning all kinds of automobile forgings, ranging from  $\frac{1}{4}$  to 10 lb., and in pieces up to 24 in. long and weighing about 6 lb., ranges from 5 to 20 min.

Two units make up the cleaning machine, one barrel for removing the scale, which is done by tumbling in the pickling solution, and the other for washing the forgings after pickling. In the second unit the sludge is washed off and the remaining acid neutralized. Both tumbling barrels are 36 in. in diameter by 60 in. long. The pickling solution, carried in a lead-lined tank beneath the barrel, is delivered into the barrel by a small bronze centrifugal pump through a copper pipe extending up into the end of the barrel. A row of holes around the barrel allows the solution to pass out and thus to drain back into the tank beneath.

### Operation Facilitated by Loading Skip

The forgings are delivered into the barrel from a loading skip which is filled near the floor level. When the outer end is raised, the load slides into the barrel. About 1500 lb. of forgings are cleaned at a time. The metal is tumbled with 1-in. flat diamond jacks of alloy steel, from 250 to 350 lb. of which are put in the barrel.

When the tumbling is finished the rotation of the barrel is reversed and the forgings and stars are discharged through a perforated cone which separates out the stars,

which are automatically returned to the tumbling barrel. The forgings are then discharged into the revolving metal-cleaning barrel.

From 15 to 18 tons of automobile forgings are being cleaned in the machine in 8 hr. They come out free from scale and in good condition otherwise. Forgings having sharp corners are not injured in the tumbling process.

The cleaning outfit was built by Ideal Industrial Machinery, Cincinnati, the washing unit being one of that company's standard metal-cleaning machines. The pickling compound used, known as Picklite, is made by the Passivation Products Co., Union Trust Building, Cleveland.

[This equipment is similar to that described in *THE IRON AGE* of Jan. 24 last, page 284, the same acid solution being used and the process in general being the same. One unit of the machine was described in our columns last July.]

### Sponge Iron as Precipitant for Lead and Copper

Porous properties of sponge iron have been utilized by the Department of Commerce in a series of experiments looking toward the improvement of the process of precipitation of lead and copper from solution. The sponge iron is substituted for coarse scrap iron, which is relatively awkward to handle and exposes only a small amount of surface to pregnant solutions. Products containing more than 80 per cent of lead were made, and valuable information relative to the precipitation of copper from various solutions was obtained. The experimental work was conducted at the Southwest Experiment Station of the United States Bureau of Mines, Tucson, Ariz., and at the Bureau's Intermountain Experiment Station, Salt Lake City, Utah, under cooperative agreements with the University of Arizona and the department of mining and metallurgical research of the University of Utah.

The results of the experiments are described in Bulletin 281, "Precipitation of Lead and Copper from Solution on Sponge Iron," by G. L. Oldright, H. E. Keyes, Virgil Miller and W. A. Sloan, just issued by the Bureau of Mines.

# Large Expansion in Electric Drive

More Than 200,000 Hp. Added in 163 Mill Motors in 1928—Total of 1681 Mill Motors Now More Than 2,160,000 Hp.

BY SIDNEY G. KOON

**A**DDITIONS to the electric drive equipment on rolling mills in the United States in 1928 were considerably greater than those of 1927. Motors ordered in 1928 numbered 163, with a total rating of 209,250 hp., compared with 116 motors and 170,350 hp. added in 1927, as shown in the article on page 939 of our issue for April 5, 1928. The average size of the 1928 motors was 1284 hp., compared with 1469 hp. for the 1927 units. No motors of under 300 hp. are included. The whole list is based on a comprehensive tabular compilation made by the Association of Iron and Steel Electrical Engineers.

Present installations as analyzed by THE IRON AGE aggregate 1681 units, with a total of 2,161,860 hp., or an average of 1286 hp. each. This average is practically identical with that of the units ordered last year, wherein it differs from the situation a year ago, when the new units were considerably larger on the average than

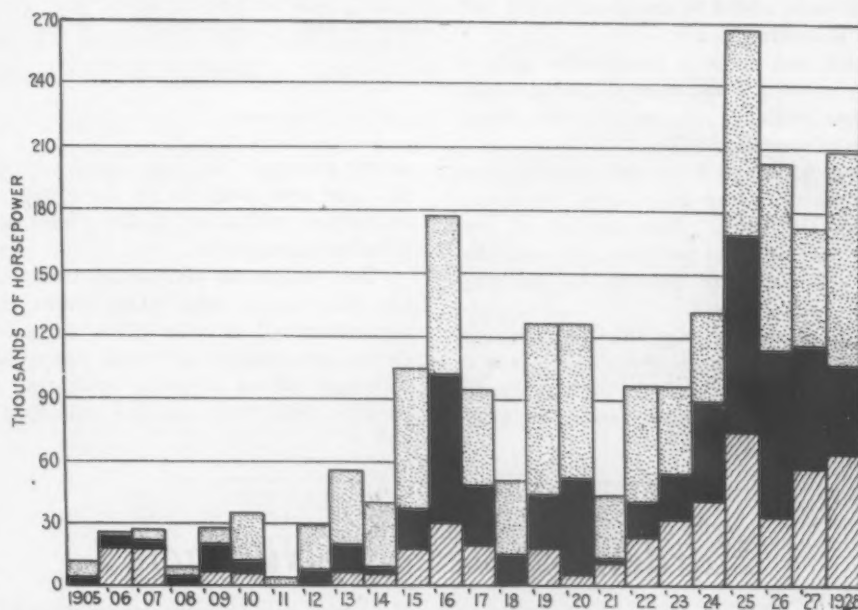
those which had preceded them. Apparently the electrification of existing mills has reached a stable situation and most of the new electric units are applied to new mills.

## Types of Mills Showing Heaviest Use

Strip and hoop mills with 267,405 hp. have since last year taken the lead in total capacity of electric units. Bar and billet mills, which previously held the lead, are in second position, with 261,585 hp.; while merchant mills, formerly second, are now third, with 259,825 hp. These

figures, together with those for a dozen other types of mills, are given in Table I, in which the total equipment and the 1928 orders are shown separately.

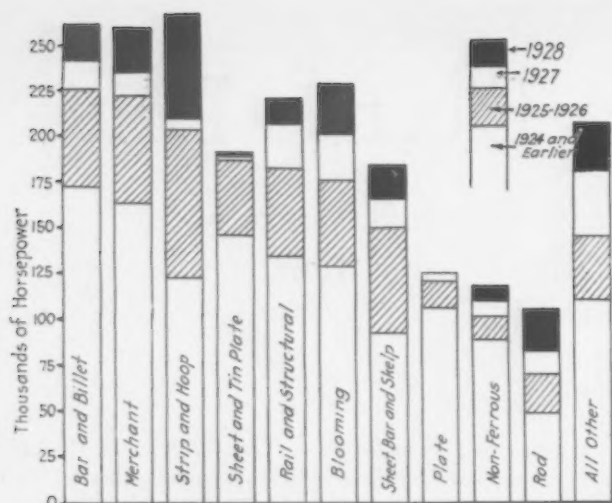
Strip and hoop mills, in advancing from third to first position last year, showed a gain of almost 53,000 hp., which is as great as that of any two of the other types. The percentage gain in this case, however, which was almost 25, was less than that of the rod mills



Growth in Application of Electric Drive to Main Rolls. Dotted areas are motors of 300 to 999 hp.; solid black, those of 1000 to 4999 hp.; shaded, those of 5000 hp. and over

TABLE I—ELECTRIC DRIVE IN AMERICAN ROLLING MILLS

Type of Mill	Total Equipment			Ordered in 1928			Previous Years			Added in 1928, Per Cent
	Motors	Hp.	Ave.	Motors	Hp.	Ave.	Motors	Hp.	Ave.	
Blooming .....	50	228,750	4,575	6	28,250	4,708	44	200,500	4,557	14.1
Bar and billet .....	157	261,585	1,666	8	23,000	2,875	149	238,585	1,601	9.6
Sheet bar and skelp .....	79	183,900	2,328	8	13,600	1,700	71	170,300	2,399	8.0
Rail and structural .....	82	220,300	2,687	8	14,900	1,863	74	205,400	2,776	7.3
Plate .....	53	125,550	2,369	0	.....	.....	53	125,550	2,369	0
Strip and hoop .....	188	267,405	1,422	41	52,950	1,291	147	214,455	1,460	24.7
Merchant .....	316	259,825	822	39	24,450	627	277	235,375	850	10.4
Sheet and tin plate .....	137	185,250	1,352	2	2,400	1,200	135	182,850	1,354	1.3
Rod .....	79	105,210	1,332	15	22,250	1,483	64	82,960	1,296	26.8
Piercing .....	41	60,200	1,468	4	9,000	2,250	37	51,200	1,384	17.6
Tube rolling .....	93	54,090	582	11	6,900	627	82	47,190	575	14.6
Wire .....	27	10,175	377	4	2,350	588	23	7,825	340	30.0
Wheel .....	17	12,900	759	0	.....	.....	17	12,900	759	0
Cold roll .....	115	53,395	464	5	2,700	540	110	50,695	461	5.3
Non-ferrous .....	225	117,200	521	11	6,000	545	214	111,200	520	5.4
Miscellaneous .....	22	16,125	733	1	500	500	21	15,625	744	3.2
Total .....	1,681	2,161,860	1,286	163	209,250	1,284	1,518	1,952,610	1,286	10.7
Average .....										



Total Horsepower of All the Mill Motors in Principal Classes of Mills, Showing Separately the 1928 Additions, Those of 1927 and Those of 1925-1926 Upon the Accumulated Totals of All Earlier Years

and the wire mills. It is an indication, however, of the large place which the new form of continuous strip mill has made in the industry. No less than 41 new motors for this group of mills were added in one year to the 147 units put in in all the preceding years.

Piercing mills, which had made a spectacular gain a year ago, added nearly one-sixth last year to the previous power. This is further evidence of the advance being made in the production of seamless tubes.

Contrasted with these instances is the fact that neither the plate mills nor the wheel rolling units added any main drive equipment during the year. The addition in the sheet and tin plate list was only 1.3 per cent, showing the effect of the partial change-over of practice to the continuous strip and strip sheet process.

Two other tables show respectively the number and size of large motors operating various types of mills and the range of sizes of mill motors, both in the aggregate and in the 1928 purchases. The addition under the large

TABLE II—LARGE MOTORS OPERATING ROLLING MILLS

Type of Mill	5000 Hp. and Up		2000 to 4999 Hp.		Added in 1928	
	Motors	Hp.	Motors	Hp.	Hp.	Per Cent
Blooming	25	165,500	17	54,650	26,000	13.4
Bar and billet	18	105,500	24	67,400	21,500	14.2
Sheet bar and skelp	7	42,200	39	102,750	7,000	5.0
Rail and structural	15	92,000	30	84,500	11,500	7.0
Plate	7	40,500	22	64,650	0	...
Strip and hoop	3	15,500	38	95,020	22,800	26.0
Merchant	1	5,610	20	52,900	0	...
Sheet and tin plate	0	...	18	40,000	0	...
Rod	0	...	16	43,150	9,850	29.6
Piercing	1	5,000	12	35,000	6,000	17.6
Wheel	0	...	1	2,000	0	...
Miscellaneous	0	...	2	4,000	0	...
Total	77	471,810	239	646,020	104,650	10.3
Average		6,127		2,703	3,609	
Percentage of total list:						
Now		21.8		29.9		
Four years ago		19.6		27.1		

TABLE III—RANGE OF SIZES OF MOTORS

Size Group	Total Equipment		Ordered in 1928		Previous Years		Added in 1928, Per Cent
	Motors	Hp.	Motors	Hp.	Motors	Hp.	
Under 500 hp.	416	148,535	35	13,300	381	135,235	9.8
500 to 999	547	352,100	57	35,850	490	316,250	11.4
1000 to 1999	402	543,395	42	55,450	360	487,945	11.4
2000 to 2999	139	304,770	13	28,650	126	276,120	10.4
3000 to 3999	73	230,550	5	15,500	68	215,050	7.2
4000 to 4999	27	110,700	2	8,500	25	102,200	8.3
5000 to 6999	52	290,810	6	31,000	46	259,810	11.9
7000 and over	25	181,000	3	21,000	22	160,000	13.1
Total	1,681	2,161,860	163	209,250	1,518	1,952,610	10.7

motor group at 10.3 per cent was almost the same as the 10.7 per cent addition to the group of all motors. This is further indication of the stabilization mentioned in a previous paragraph.

Two diagrams similar to those used last year bring the story up to date. One shows the annual growth in application of electric drive to main rolls. The other shows graphically the total power of all motors in the principal classes of mills, indicating separately the additions to 1928, 1927 and the 1925-1926 period.

## Hardening Steel by Nitrogen

IN a note presented to the French Academie des Sciences, Leon Guillet discusses the new hardening process which he calls "nitration of steel," now being adopted by the French metallurgical industry. The process is based on researches made by A. Fry into the action of ammonia on carbon or alloy steels; the piece to be case hardened is heated in an atmosphere of ammonia to 500 deg. C. after all machine work has been done.

Certain alloy steels are particularly sensitive to this treatment. An extremely hard surface is produced in a relatively short time; at the end of four days the effect may penetrate to a depth of 0.8 mm. Steels containing aluminum are ordinarily used in commercial practice. A point of advantage is that the piece is not subjected to a quench from a high temperature, nor to subsequent tempering operations.

Guillet aimed to determine the comparative action on many commercial alloy steels, therefore all tests were made after the same treatment, that is, 60 hr. at 500 to 510 deg. C.

While electrolytic iron and plain carbon steels are readily affected by ammonia, the action is detrimental—the metal becomes extremely brittle even to the core, and there is only a slight increase in surface hardness.

Results on nickel steel were found to be negative. No

effect was noted except on pearlitic steels; sometimes the hardness of such steel previously heat treated was lowered at the surface.

Low chromium steels are hardened to a pronounced degree; high chromium steels are unaffected.

The only manganese steels tested contained approximately 1 per cent of alloy; this steel's hardness was increased from 211 Brinell to 272.

Tests on aluminum steels were carried out to limits unusually high in aluminum. Hardening from 156 to 253 Brinell was noted in steels analyzing 14 per cent aluminum.

Silicon steels also were hardened somewhat, as were many chromium-nickel steels. High speed steels (chromium-tungsten) were not affected.

In general, complex alloy steels containing aluminum were hardened to a notable extent. Of the other alloys tested, molybdenum, chromium and silicon all were able to acquire an important gain in surface hardness after heating in ammonia.

[Editor's Note: Vanadium also seems to have value as an alloy addition for nitriding. Titanium has some effect, although it is not as good as aluminum for the process. Zirconium steels have given erratic results. See THE IRON AGE, Feb. 23, 1928, p. 538.]



# Kathner Normalizing Furnaces

Special Design to Avoid Loss of Heat Through Shafts—Long Heating and Cooling Zones

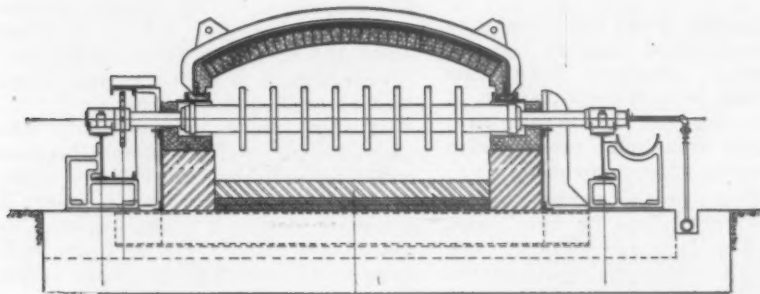
**D**ESCRPTION of two normalizing furnaces installed last year in the plant of the Newton Steel Co. formed the subject of a paper read before the Engineers' Society of Western Pennsylvania by

are an exception to this statement, as they have a taper and are provided with a stack opening.

Expansion of the bottom section in the heating zone is provided for by division into parts of definite length.

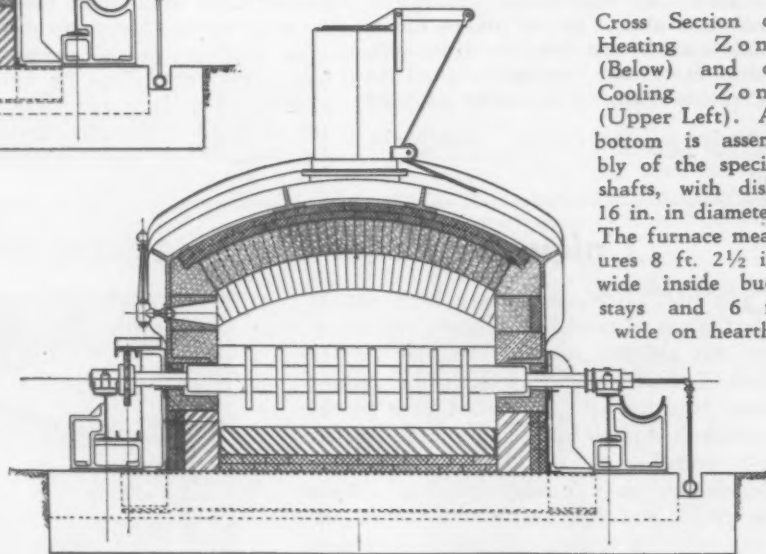
means of fingers, insuring a uniform amount of insulation around the seamless tube.

As these disks are bored slightly larger than the diameter of the tube, assembly is facilitated and no more than one of the three points on each disk will come in contact with the tube. This tends to cut down conduction of heat from the rim to the tube and results in the disks being at practically furnace temperature all the

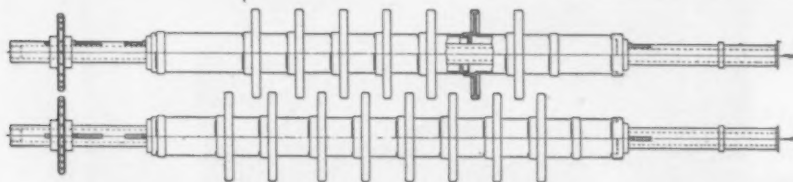


C. P. Mills, chief engineer Duraloy Co., Pittsburgh. These were built with the idea of obtaining good control of heat losses and material flow, and at the same time to improve the quality of sheets passing through. Much heat was found to be lost in some cases by the water cooling of the shafts. It was attempted to overcome this by means of an insulated disk.

Both furnaces are 155 ft. long, consisting of a heating zone of 75 ft. and a cooling zone of 80 ft. The heating zone is divided into two parts—a pre-



Cross Section of Heating Zone (Below) and of Cooling Zone (Upper Left). At bottom is assembly of the special shafts, with disks 16 in. in diameter. The furnace measures 8 ft. 2½ in. wide inside buck stays and 6 ft. wide on hearth



heating section of about 35 ft. and a soaking section. The pre-heating section has no burners within 15 ft. of the entering door, which reduces to a minimum the loss of heat out of the end of the furnace. This front part receives its heat by the back flow of gases from the rest of the furnace.

## Insulation of Furnace

Lining of the top sections, walls and bottom of the furnace is with a material having a high heat-insulating value, so that thin sections may be used. The material, which is called "Super-ex," was procurable in slabs of some size, which was desired as increasing the speed of erection.

Owing to the sectional type of construction used in the furnace, all units of either the cooling zone or the heating zone are interchangeable. The two end sections in the heating zone

Thus, the total expansion in the furnace is not cumulative and there is no creeping of the side walls, to cause binding on the shafts.

## Special Design of Shafts

Insulated shafts throughout the furnace are used as conveying mechanism. A typical shaft assembly is shown in the illustration. These shafts are covered by a patent. In each of the furnaces described there are 86 of these shafts made of Duraloy and 40 made of semi-steel, the latter being at the exit end of the cooling zone.

Each shaft consists of a seamless steel tube on which are mounted Duraloy or semi-steel disks and spacers. The space between the hub and the shaft is filled with an insulating mixture selected to avoid any tendency to pulverize and drop out. The disks and spacers are lined on the shaft by

time, which would not be the case with solid hubs.

## Assembling the Shafts

Disks and spacers are constructed with dog-ears and match into each other and into the driving collars at the ends. These collars are keyed to the shaft and the key is welded in place, to prevent creep along the shaft, as this would tend to cause binding on the side wall. Each shaft, complete, weighs about 900 lb.

One end of each shaft is plugged, the other end being connected with the water cooling system. A brass drip cup is used to prevent the water from traveling back along the tube to the bearings and thence to the floor.

Spacing of shafts 15 in. center to center and of disks 8 in. apart on each shaft, with a stagger as shown in the drawing, was found most satisfactory in handling all types and gages of sheets. Shafts with Duraloy disks were used throughout the heating zone and for some distance into the cooling zone. The rest of the furnace was given semi-steel disks, which are believed to be better than

cast iron, as the latter has a tendency to grow and is less resistant to heat.

On one end of each shaft is a sprocket over which runs a chain of the roller type. This is driven by a main drive sprocket at the discharge end of the furnace, connected up with a spur-gear speed reducer from the variable-speed motor. The first and last rolls of the furnace have auxiliary

chains which drive the roller tables provided outside each end of the furnace. Thus, with one drive, all the rolls of a furnace 155 ft. long plus 15 ft. of roller table are operated.

By using the variable-speed motor it is possible to produce furnace speeds from 9 to 36 ft. a minute. This takes care of wide variation in the gages of sheets to be handled.

## Soaking Pit Cover Control

### Use of Electric Motors Instead of Hydraulic Power, with Separate Motors Recommended

BY H. A. WINNE\*

IN the older steel mills the covers for the ingot heat-soaking pits are often hydraulically operated. Practically all of the newer installations employ electric drive, a motor being connected to each cover through a rack and pinion, or by means of an endless cable and traction drum. In some cases one motor is used to operate a gang of as many as four

covers, opening of the individual pits being accomplished through the use of magnetic clutches. With this arrangement, however, the failure of one motor or control ties up four pits; consequently individual motor drive for each cover is recommended.

In addition to the usual positive and negative trolleys on the crane, additional trolleys are required, one for each pit across the width of the building, and a master switch in the

crane is necessary for each trolley. Sectionalized trolley wires connect through the floor master switches to the control panels for the covers, so that, when the crane is in position over any row of pits, the various master switches in the crane can control the corresponding covers.

For example, when the crane is over the first row of pits, the crane master switches will be connected through the trolleys and floor master switches to the control panels for the covers of all pits in that row.

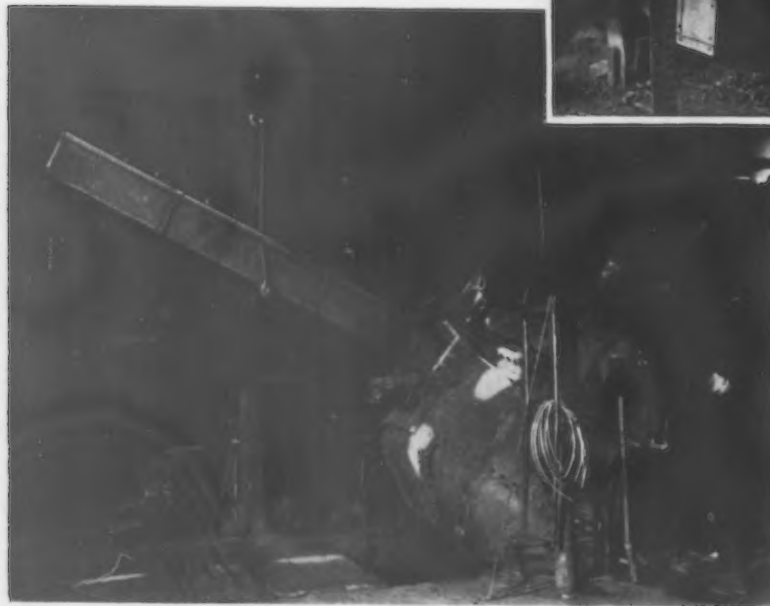
It will be noted that the crane does not have control of the cover unless the floor master switch is in the off position. In other words, the floorman can take control away from the crane. [This feature of control was described briefly in *THE IRON AGE* of May 17, 1928, page 1381, in connection with the large beam mill of the Carnegie Steel Co.]

If this system of control is employed, limit switches should be provided to limit the travel of the cover in either direction, and a solenoid brake is desirable. The motors involved are usually 7½ to 15-hp. mill type units, and may be either series or compound-wound.

\*Industrial Engineering Department, General Electric Co., Schenectady, N. Y.

## Unique Device for Charging Scrap Lowers Production Costs

PRODUCTION costs have been cut by the use of mechanical means for charging the electric furnaces of the Dayton Steel Foundry Co., Dayton, Ohio. Steel scrap is delivered in railroad cars to the company's storage yard, and a large electric crane transfers the material to a chute just outside the main foundry building. When the chute is filled, the remainder of the scrap is stored in the yard until it is needed. The chute is not regarded as a permanent storage place, but is of sufficient capacity to hold enough scrap to supply a day's requirements.



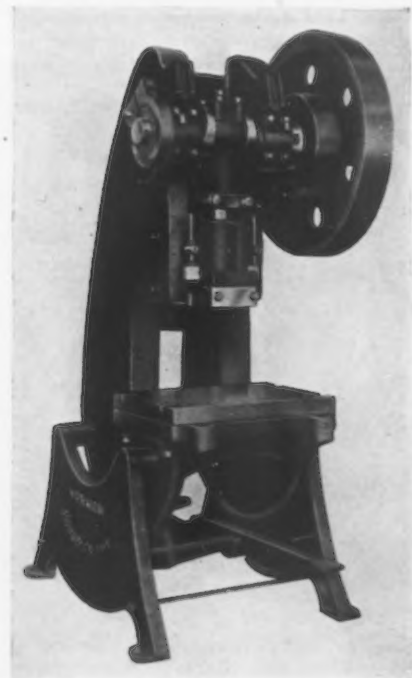
At the bottom of the chute is a track running into the foundry to a point near the electric furnaces. Whenever steel scrap is desired, a charging bucket, 13½ ft. long, 1½ ft. wide and 1½ ft. deep, is put on a flat car and is pushed by hand to the lower end of the chute, where it is loaded. It is then run back into the foundry and is picked up by an electric crane, which carries it to the furnace. There the discharge end of the bucket hooks on to the lower end of the charging door of the furnace and, as the furnace tilts, the charge of steel scrap moves by gravity into the furnace.

## Power Presses for Production Work

**M**ASSIVE construction, adapting the machines for heavy-duty work, is emphasized by the Vernon Foundry, Inc., Hollydale, Cal., in announcing the inclinable and solid back punching presses illustrated herewith. Both machines are made in a range of sizes, and deep throat models of the power punching press can be furnished. A solid back punching and riveting press is also built.

The frame of the inclinable press is heavy and is provided with cross bars that rigidly tie the two housings

together across the back. The housings are made extra wide directly below the shaft bearings and have a heavy crowned reinforcement above each shaft bearing. Long slides and gibs, with both front and back gib bearings machined into the solid frame, are features. Means are provided for accurately adjusting the slide to compensate for wear. Crankshafts and connection screws are of high-tensile steel forgings and are heat-treated and ground to fit.



Back-Geared Inclinable and Other Presses Have the Pinion or Intermediate Shaft Fitted Either with Ball or Tapered Roller Bearings

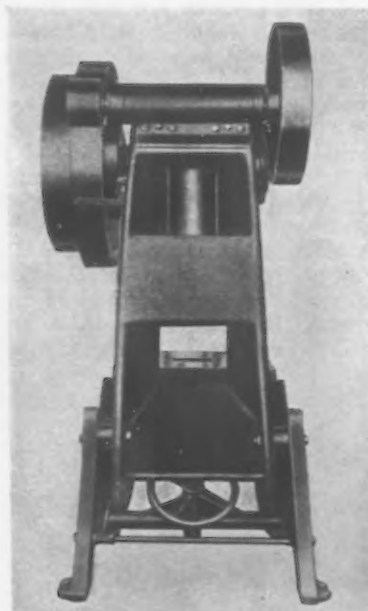
The clutch of both the inclinable and the power punching press is of the pivoted dog type. The striking or clutch pin is seated or pivoted closely as possible to the axis of the crankshaft and, upon being released, swings outwardly into and parallel with the hub of the revolving flywheel. This arrangement is emphasized as minimizing the impact and wear on the clutch pin, and also as presenting wider contact surface between the clutch pin and flywheel. The clutch collar is of heavy cross-section, and the hub of the flywheel is enlarged and reinforced. The clutch collar has four openings or engaging points for

the clutch pin, which provides for quickly throwing the press into action when the foot treadle is depressed. The flywheel is made with a continuous web.

A non-repeating safety clutch is standard equipment both on the inclinable and the power punching presses. It can be changed over quickly to operate continuously or intermittently. A clutch lock is also provided so that by tightening one screw, the clutch cannot be tripped at all.

### Anti-Friction Intermediate Shaft Bearings

The mounting of pinion or intermediate shafts of all sizes and types of back-geared presses in either ball or Timken roller bearings is a feature of all the machines. This is intended not only to reduce power re-



Cross Bars Tie the Housings Together. The inclining attachment is actuated by handwheel

quirements but also to assure more permanent alinement of the pinion and driving gear. All gears and pinions are machine cut from the solid. Main or bull gears are semi-steel and main driving pinions are hammered steel forgings.

An inclining or frame-tilting attachment consisting of a forged steel screw with its pivot and base as far back as possible to the rear of the press frame, is provided for the inclinable presses. The screw is operated by handwheel, the lower face of which is seated on a heavy thrust ball bearing to facilitate raising or lowering of the frame.

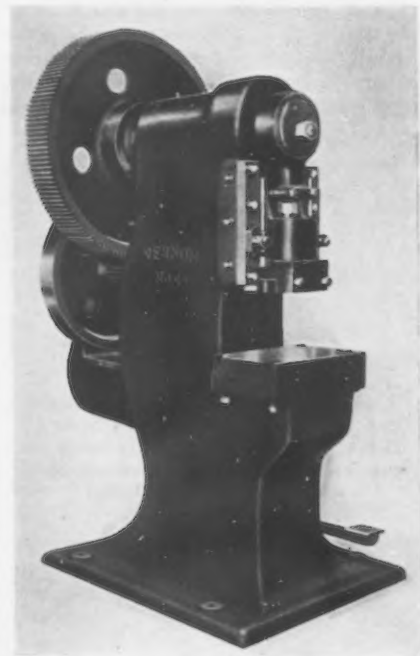
The presses may be arranged for either direct geared motor drive or with belted motor drive, with the motor mounted either on top of or on the back of the press frame.

Seven sizes of the standard flywheel inclinable press, ranging in weight from 600 to 8500 lb., and four

sizes of the geared type, ranging in weight from 4900 to 9500 lb., complete, are built. The standard stroke ranges from 1½ to 4½ in. and the maximum stroke from 2½ to 7 in. Other specifications for the smallest and largest inclinable press are: Depth of throat, center of slide to frame, 4 and 11½ in.; distance from top of bed to slide, stroke down, adjustment up, 5 and 11½ in.; and area of bolster, 8½ x 12½ in. and 24 x 33 in. Flywheel diameters range from 18 to 42 in. and flywheel weights from 120 to 1300 lb.

Solid back punching presses of flywheel type are made in five sizes and the same machines of geared type in four sizes. A deep throat pattern is also available. These machines are intended for a wide variety of heavy punching, shearing, trimming, perforating and bending operations, and having the flywheel at the rear, they are adapted for use on long work. The smallest press with standard stroke will shear ¾-in. round iron and the largest 1¼-in. round iron. The same machines will punch a 1-in. hole in 5/32-in. and ¾-in. thick mild steel, respectively.

Specifications of the smallest and the largest solid back flywheel type punching press are in part as follows: Weight, complete, 1500 and 9400 lb.;

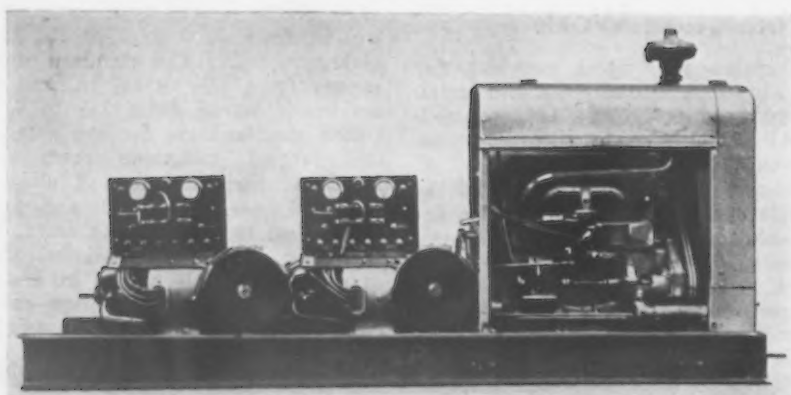


Solid Back Geared Press

standard stroke of slide, 1½ and 2 in.; maximum stroke of slide, 2½ and 4 in.; depth of throat, center of slide to frame, 6 and 12½ in.; and area of bolster plate, 10 x 15 and 19 x 30 in. The floor space occupied is 30 x 27 in. and 42 x 80 in. overall.

The throat depth of the deep throat solid back punching presses, which are made in four sizes, is 20 and 22 in. The floor space occupied by these machines ranges from 27 x 52 in. to 40 x 88 in. and the weight of the flywheel type ranges from 2700 to 8000 lb.





## Welding Machine for Two Operators

A VIEW is shown of a welding machine for two operators recently developed by Electric Arc Cutting & Welding Co., Newark, N. J. There are two complete generating units, (each including the necessary rheostats, indicators and switches) connected to a 40-hp. Continental gas engine. Various outlets provide for welding light, medium or heavy steel with the metallic electrode, and the

switchboards are arranged so the full capacity is obtained for a carbon arc.

Several distinct advantages are claimed for this arrangement over the former plan of operating two arcs from a single and larger generator, chief among which are that the new arrangement requires only one-half the power and gasoline consumption when operating at a constant minimum voltage.

## Devices for Conserving Welding Gases

FOR conserving welding and cutting gases and saving the time usually required to adjust torch flames when work is temporarily held up, the Weldit Acetylene Co., Detroit, is

the torch is hung on the arm that projects from the device, the flame is extinguished and the gas flow stopped. By lifting the torch from the arm and passing it over the pilot light at the top of the Gasaver, it is lighted, the flame being the same as originally adjusted. In addition, accidents are prevented by eliminating

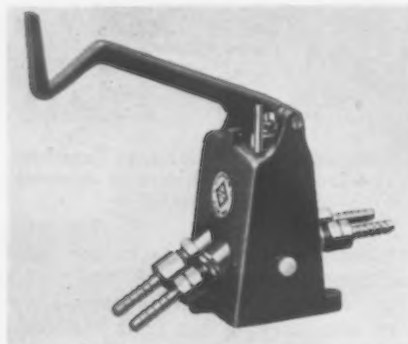


The Style D Gasaver Is at the Right, the Style G, Above, and the Style C, Below. When the torch is hung on the arm, the flame is extinguished and the gas flow stopped



offering two new types of its Gasaver.

This device saves gas by shutting off the supply when it is necessary to lay aside the torch because of setting new work, turning jigs or securing a new welding rod or because the welder has to leave his bench. When



the practice of swinging lighted torches from hooks.

The device is placed between the regulators or feed lines and the cutting or welding torch. Both gases pass through the Gasaver, control of which is governed by the projecting arm acting on two positive-seating spring valves. Adjustment of these valves is by means of two small set-screws directly over each plunger.

Three styles of the device are made. The style D is an improved model for general production work with acetylene and oxygen. It has special valves which close automatically should the torch flash back, thus preventing injury to the operator, regulators, hose or tanks. The style G, a new model,

is used with illuminating gas and oxygen or compressed air, and has large openings and valves to permit free passage of the gases to the blow-pipe. The style C, also a new model, is for light welding and lead burning torches using illuminating gas and oxygen.

## Automatic Shape Cutter

AN improved automatic machine for cutting straight or curved outlines or openings in steel plate or slabs, known as "Airco-Davis-Bournonville No. 4 Camograph," has been developed by Air Reduction Sales Co., New York. As shown in the illustra-



Straight and Curved Line Cutting of Steel Plate and Slabs Is Accomplished Automatically

tion the V-shaped base *A* carries a post *B* to the top of which is attached the template *C* by means of wing nuts. Cutting torch *D* and driving motor *E* are carried by aluminum arms *G* hinged on Fafnir ball bearings. The cutting torch is adjustable up and down by means of the usual hand-operated rack and pinion to clear the work beneath.

The flame is driven in the correct line by means of the magnetized knurled roller *H* clinging to the steel template and driven at correct speed by the motor through reduction gearing. The knurled roller is the upper end of a powerful electro magnet; it is strongly attracted to the template surface, and guides the hinged arms and cutting torch with it as it slowly rotates and traverses the template by virtue of the traction thus afforded.

The magnet consumes an energizing power of approximately 15 watts impressed at 110 volts. The torch directly beneath the roller describes the same path as does the roller as it follows the cam outline, and cuts the form from the steel plate beneath its tip.

Although the cams or templates are usually of the internal or closed type, they may be of open form for straight or curved line cutting. Cams may be

quickly removed and replaced. Cams are machined to the shape to be cut, of course making due allowance for the diameter of the magnetic roller, width of kerf or cutting slot, and machine tool finish, if any is required. Thus, an internal cam to produce a pear-shape boiler handhole is dimensioned larger than the handhole by an increment equal to the diameter of the roller minus the width of the kerf, no machine finish being needed.

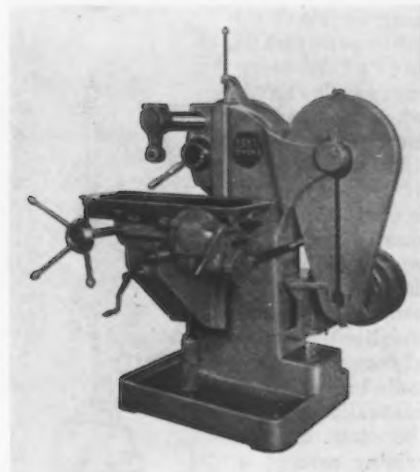
The motor is started and stopped by a thumb switch *K* and the magnet is energized by a ball hand switch *L*. The distinction in switches is made so the operator can locate either by feeling. Direct current at 110 volts is required for operation. Cutting speed is varied by a finger-controlled adjusting screw projecting from the governor, an integral part of the motor. Turning this screw in a clockwise direction will reduce the speed and vice versa.

Principal dimensions are: Vertical movement of slide and torch, 5 in. Largest circle cut, 14 in. internal diameter. Maximum reach, 18 in. Largest segment cut (back of post), 13 in. by 33 in. Cutting speed, 2½ to 28 in. per min. Weight, complete, 150 lb.

### Miller with Combination Hand and Power Feed

**A**N improved milling machine having a combination manual and power feed arrangement, the operator using either at will, has been brought out by the Kent-Owens Machine Co., Toledo, Ohio.

In either case the quick return is by hand, the rapid traverse being



The Operator May Use the Hand or Power Feed at Will

at the rate of 600 to 700 in. per min. One star handwheel conveniently positioned, serves both for the manual feed and the rapid traverse. Power feed is controlled by the lever at the right-hand front of the machine and adjustable trip dogs are provided on the side of the table for automatic engagement and disengagement of this feed. The head may be fed ver-

tically by hand and to facilitate this operation, the head is counterbalanced by weights inside the column.

The table is 25 in. long and 14 in. wide, overall, and has two ¾-in. T-slots. The maximum distance from the spindle to the surface of the table is 17½ in. The spindle and backshaft are mounted on Timken roller bearings, assuring, it is stated, not only long accuracy, but the high speeds necessary for small diameter cutters and for milling aluminum, brass and other soft material, as well as for the use of Carbide and similar tools. The column of the machine is of rugged design, is ribbed throughout and all slides have large bearing surfaces. The coolant tank, of large capacity, is cast integral in the column. The machine may be arranged either for belt or motor drive; for the latter a 3 or 5-hp. motor is recommended.

### Automatic Reversible Knife Grinder

**O**N the automatic knife grinder illustrated, which is being introduced by Samuel C. Rogers & Co., 191 Dutton Avenue, Buffalo, knives may be ground with the cutting edge either up or down. In grinding knives with



Knives May Be Ground with the Cutting Edge Either Up or Down

the cutting edge up, the edge is always in view of the operator, and it is claimed that the heat generated is carried away from the cutting edge and toward the body of the knife.

Five sizes of the machine, from 26 to 54 in., are built. The base and column are cast in one piece, and in addition to carrying the bed, slide and knife table, the column houses the main operating parts, protecting them from abrasive dust and dirt. Three longitudinal bearings are provided for the slide and knife carriage, and the back bearing has a 1-in. wide adjustable gib for taking up wear. The steel miter gears, rack and pinions are cut from the solid.

A 10-in. diameter cup wheel having

a surface speed of 3300 ft. per min. is employed. The Rogers spring cross-feed, claimed to prevent overheating of the knives, is used, and both longitudinal and cross feeding are fully automatic. Provision is made for stopping the feed at any desired point. Travel of the table is at the rate of 40 ft. per min. and the length of the travel can be adjusted to suit the work. On the 44 and 54-in. machines supports are furnished for both ends of the bed. The arbor can be mounted in ball or plain sleeve bearings and the drive can be by a 1-hp. built-in motor or by belt. A water attachment with means for regulating the flow to the point of grinding is provided, as well as an index for gaging the degree of bevel of the knives.

### Motor-Driven Exhauster for Hisey Grinders

**B**ALL-BEARING motor-driven exhauster equipment has been developed by the Hisey-Wolf Machine Co., Cincinnati, for use on its grinders of 10, 12 and 14-in. wheel capacity,



The Exhauster and Main Drive Motors Are Controlled by the Same Starter

as well as for buffing and polishing machines of 8, 10, 12 and 14-in. wheel capacity. The exhauster motor and the main drive motor are controlled simultaneously by the same automatic starter.

Specifications and prices of a large number of "restored" machine tools are given in a 158-page, 9 x 12 in., illustrated catalog issued by the Simmons Machine Tool Co., Albany, N. Y. The catalog is intended to serve both as a listing of the equipment now on hand and as a picture of the comprehensive stock usually carried by the company. This stock, of over 2000 tools, is diversified, all classes of standard machine tools being represented, as well as presses, forging hammers, shears, air compressors, blowers and other equipment.



## Motor-Driven Universal Grinder

**T**HE Brown & Sharpe Mfg. Co., Providence, has added to its line a No. 1 motor-driven universal grinder which is similar to its belt-driven machine of the same size except that it is equipped with three constant-speed electric motors. An important feature is the reversible wheel-stand motor which may be reversed for internal grinding when an internal grinding



The Wheel-Stand Motor May Be Reversed for Internal Grinding

attachment is used. Hence it is unnecessary to swivel the wheel-stand platen to a reverse position. The motor may be reversed by means of a convenient lever.

The base of the machine is a one-piece casting and is supported at three points. The bed is made long in order to support the table at its extreme travel, and the cross-feed slide is counterweighted to eliminate backlash. The motors, mounted integrally on the headstock, on the wheel stand, and at the rear of the machine, are carefully balanced.

## Screwnail for Fastening Sheet Metal to Wood

**A** NEW type of nail, called the Screwnail because it combines the qualities of both a nail and a screw, has been brought out by the Parker-Kalon Corporation, 200 Varick Street, New York, and is especially adapted to the fastening of sheet metal to wood. The product is driven like a nail and is said to hold like a screw.



The hardened spiral thread and needle-pointed pilot of the Screwnail, it is stated, enables it to be driven through much heavier sheet metal without bending than ordinary nails. In many instances it is not necessary to punch or drill holes in the sheet metal to make an attachment. The hardened spiral thread of Screwnail

forms a thread in the metal burr and wood, thus providing a secure fastening. Laboratory tests are said to show that the product has four times the holding power of ordinary nails.

Some of the uses to which it is particularly adapted are fastening cornices, metal ceilings and corrugated sidings to wood; laying tin roofing and gutters; fastening moldings, trim, etc., to metal-clad windows and doors, and attaching doors, roofs, trim pads, upholstery, running board moldings, etc., to automobile bodies.

## Indicator for Explosive Gas Mixtures

**S**OME years ago the Union Carbide & Carbon Research Laboratories developed a portable indicator whereby methane ("fire damp") could be immediately detected in coal mines, thus furnishing another safeguard against disastrous explosions. This equipment has now been adapted to detect a wide variety of industrial gases, and is marketed through the safety appliance department of Union Carbide Sales Co., New York.

The operator shown in the view



Detector Ready to Explore Hold of Oil Tanker

holds the detector head in his right hand. A coil of wire connects it to a storage battery (strapped to his back) and the indications are read directly on the meter at his chest. By means of poles and ropes the detector head may be raised into overhead pockets or lowered into tanks.

In operation a steady current from the storage battery heats a platinum coil in the detector head to incandescence. In clear air the needle on the indicator (which measures the electrical resistance of the hot coil) is set as zero. When the detector head is in an atmosphere carrying more than 0.1 per cent of a combustible gas, say carbon monoxide, the carbon mon-

oxide molecules striking the surface of the hot filament burn, thus increasing sensibly the temperature of the filament, and changing the electrical resistance a corresponding amount, which change is immediately registered by the indicator. By properly calibrated scales, or a specially graduated dial, the result may be read directly into volume percentage of the gas known to be present. To prevent an explosion being started from the hot filament the latter is inclosed in three concentric gauze screens, similar to those used in the Davey safety lamp. A perforated bonnet of thicker metal is then screwed over the assembly for protection against accidental damage.

Presence of various petroleum vapors, natural or artificial gas, carbon monoxide, alcohol fumes, hydrogen sulphide or carbon bisulphide can thus be indicated without chemical analysis. If the needle swings over to the red section of the scale, or oscillates, it is immediate warning that the gas mixture is explosive and must be ventilated before entering for repair work or other purpose. The indicator does not guard against poisonous substances, however. Thus a man could not safely enter a chamber containing small traces of carbon monoxide, much too little to cause danger from explosions, without a proper gas mask.

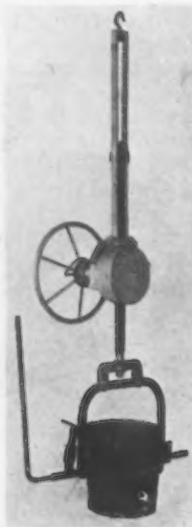
## Hand-Operated Foundry Pouring Device

**T**HE pouring device illustrated, featured as especially adapted for the pouring of malleable iron and of steel, is equipped with a handwheel and gear arrangement for raising the ladle. It is stated that a 400-lb. ladle may be raised conveniently while metal is being poured. The handwheel raising mechanism permits the making of height adjustments in very small increments, which adapts the device for light bench work and the lighter types of floor work. The ladle lowers automatically when the dog on the raising ratchet is released.

All load sustaining parts are of steel, and rotating members

are mounted in ball or roller bearings and run in a bath of oil.

The device, manufactured by the Modern Pouring Device Co., Port Washington, Wis., can be used on closely crowded molds and, being arranged to rotate on a swivel at the upper end, it is adapted for pouring both sides of mold conveyors.





# Special Steels Feature British Exhibit

London and Birmingham Fair Demonstrates Increasing Commercial Usefulness of Stainless and Rustless Products

LONDON, March 5.—The British Industries Fair of 1929, which is being held simultaneously in London and Birmingham, has much of interest to the iron and steel trade, especially with regard to exhibits of stainless and rustless products.

Stainless steels are essentially a British discovery, although the associated alloys which, under proprietary names, serve the same purposes have been widely developed. Such steels contain from 11 to 14 per cent of chromium, and sometimes more or less nickel. Other strongly acid-resisting steels contain nickel and/or chromium and, capable not only of withstanding corrosive and erosive conditions but also of preserving a relatively high tensile strength at elevated temperatures, are being increasingly employed in modern high-temperature, high-pressure steam engineering, for turbine blading and chemical plant, as well as for the homelier domestic uses to which they are now being successfully adapted.

They are being used for house, office, and factory fittings, in sanitary engineering, and even in building construction. An interesting development in the latter connection recently was the employment of stainless steel chains in the strengthening operations for the dome of St. Paul's Cathedral. Of tool steels several new varieties have been introduced, one or two of which are said to develop great hardness and to maintain their maximum useful properties without the necessity for the special heat treatment usually required in other cutting and high-speed steels. An alloy containing tungsten carbide and cobalt for similar purposes has been introduced within the last few months.

## Nickel Alloys for Variety of Purposes

One of the most striking displays in the Birmingham section of the fair devoted to metals is the exhibit of Henry Wiggin & Co., Ltd., which is constructed entirely of silveroid. Most of the sections illustrate current practice in the manufacture of shop fittings, show cases, etc., and the stand demonstrates clearly the variety of forms into which the alloy can be worked. The show cases contain a large assortment of articles illustrating the uses of nickel alloys. Among the larger exhibits is a miniature shop front executed in silveroid and an ornamental staircase grill of the same material as fitted to Imperial Chemical House, the newly erected palatial premises at Millbank (London) of Imperial Chemical Industries, Ltd. Tubes are displayed in a novel

manner. An added attraction is a range of cast and rolled nickel anodes in all shapes and forms as supplied to the electro-plating trade.

Accles & Pollock, Ltd., of Oldbury, is demonstrating weldless steel tube drawing processes for general manufacturing purposes. Examples are shown of special sections selected from over 700 different shapes, all of which have been drawn from stock dies. These special sections are adapted for components and articles used in many different industries, and it is claimed that this method of production is economical, gives clean, smooth services, holds closely to specified measurements, gives maximum strength with minimum weight, retains the tensile strength of the material, and eliminates expensive machining apparatus. Many articles are being produced by tubular methods that were previously made from pressings and stampings, castings, solid metal and woodwork.

Two groups of exhibits, magnetic alloys and electrical resistance alloys, are shown by the Gutta Percha Co., London. Within the first group are the patented alloys Mumetal and Rhometal. These are stated to show remarkably high magnetic permeabilities in very feeble magnetic fields. The third alloy illustrated is Radiometal, primarily developed for use in the cores of audio-frequency transformers. It is characterized by high incremental impermeability and is of special use to manufacturers of radio sets. The second group of alloys, the nickel-chromium resistance type, is characterized by great strength at very high temperatures. On the stand are various instruments on which these alloys are employed, including an electric radiator fitted with pyrometric ribbon, and alloys in the form of stampings, strips, sheets, and castings.

## Special Steels Used for Domestic Utensils

Hadfield's, Ltd., of Sheffield, showed various forms of its special steels, including heat-resisting steels which retain their ordinary strength at temperatures up to 900 deg. C., as is revealed by demonstrations given on the stand. Another steel of the non-corroding type is being increasingly used for domestic utensils, automobiles, and ships' fittings, and other articles where a permanently bright finish is required. This steel is completely resistant to a wide range of chemical agents, and its greatest usefulness is to be found in the construction of plant for the numerous

large-scale processes employed in the chemical and allied industries. It is eminently suitable for marine conditions and for constructional parts of aircraft. A section cut from a cast steel hydraulic cylinder 20 ft. long is exhibited to show how thin the walls can be cast in Hadfield's steel, and examples of high-speed cutting steels are also on view.

Thomas Firth & Sons, Ltd., Sheffield, made a feature of its specialties, Firth's Stainless and Staybrite steels. So rapid has been the development of the Staybrite in particular that ingots weighing up to 25 tons have been produced to keep pace with the demand. The applications of this super-rustless and acid-resisting steel are demonstrated in many forms ranging from dyeing machines to spoons, forks, and tableware, and from pump impellers to cigarette cases and household equipments of all kinds. Increasing attention is being given to the economies attendant on the use of polished sheets of the Staybrite as the starting point in the manufacture of many articles which require piercing, pressing or stamping. Many examples of articles produced in this way are on view, together with polished sheets in the various sheets obtainable from the Blackheath works of the company. Special alloy steels which have played an important part in regaining the Schneider seaplane trophy for Great Britain and in certain world speed records held by Malcolm Campbell are shown, with a range of products from the Firth engineers' tool department.

## Copper Alloy Steel in Various Shapes

The old established firm of the Earl of Dudley's Round Oak Works, Ltd., showed examples of new rust-resisting steel brought out within the past year. It is a copper alloy steel, and the firm claims to be the first steel manufacturer in England to put this material on the market in the form of angles, tees, channels, flats, joists, plates, sheets, and tube quality steel. A guarantee of 28 to 32 tons per sq. in. tensile strength is given, and many extra years' life can be added to the wagon because this rust-resisting steel withstands corrosion better than any wrought iron. Welded steel tubes are also being made from this material.

There is a special display of patent steel rail keys, intended to replace wooden keys, in the exhibit of James Mills, Ltd., Bredbury. The London Underground has adopted these keys, and the change has been so satisfactory that it has not had to touch

the rails for two years. They can withstand a crushing load of 16 tons without losing their shape. The firm has a good display of sections in bright drawn steel, of which it makes over 400 different descriptions.

Various grades and qualities of crucible cast steel and high-speed steels, with specimens of tools manufactured therefrom, are displayed by Turton Brothers, and Mathews, Ltd., Sheffield. A special feature is the exhibit of heavy and light shear blades for shearing ship plates, sheets, bars,

etc. A comprehensive display of coil springs for every purpose is arranged, from springs weighing several hundred pounds to an ounce.

The Walker Fender Co., Ltd., Birmingham, shows a very interesting range of hearth furniture made in rustless Monel metal. This finish has a particularly smart appearance, and the firm claims to be the first to exploit the metal in full suites of hearth furniture and also to be the only firm that makes hearth furniture in Chinese lacquer.

as the stress at which the metal elongates 1 per cent during 100,000 hr. at that temperature.

## Apparatus for Thermomagnetic Analysis of Steel

Results of a study of the thermomagnetic properties of steel, with particular reference to any relationship that may exist between magnetic properties and heat treatment, will soon be published, according to an announcement by the Department of Commerce, Washington.

Recently considerable attention has been given to the study of the magnetic properties of materials, particularly for the purpose of establishing any correlation that may exist between the magnetic properties and structure or mechanical characteristics. One phase of the subject, which has hitherto been somewhat neglected, is the study of the magnetic reactions that occur during heating or cooling of a given material. Through such a study it is possible to learn a great deal of the constitution of materials and the effect upon them of various treatments.

A forthcoming number of the *Journal of Research* of the United States Bureau of Standards will contain a description of apparatus recently set up at the bureau for carrying out investigations of this kind, together with some typical results given for the purpose of illustrating the possibilities of the method. The report points out that there is still much to be learned of the phenomena associated with the hardening and tempering of steel and it is desirable that every useful means should be brought to bear on this important problem.

## Soft Steel Resists Corrosion

### Improved Chromium-Nickel Analysis Marketed by Three American Companies Under Krupp "Nirosta" Patents

CENTRAL Alloy Steel Corporation, Massillon, Ohio, and Babcock & Wilcox Tube Co., New York, have been marketing for some time a low-carbon chromium-nickel austenitic steel for corrosion resistant purposes, known as Enduro 18-8. With the formation of the Krupp Nirosta Co., Inc., for American exploitation of the stainless steels patented by Krupp and marketed in Germany as "Nirosta," the two companies first mentioned have been licensed to use the Krupp patents and have received the advice of Dr. Benno Strauss, head of Krupp's research laboratory. The material now being produced in the United States is said to be so much better than "18-8" that it is to be marketed as Enduro KA2 steel. Ludlum Steel Co., Watervliet, N. Y., is also producing the improved material by the same processes in its own mills and is marketing it under the same name.

Typical chemical analysis of Enduro KA2 steel follows:

Carbon .....	under 0.16
Manganese .....	under 0.50
Silicon .....	over 0.50
Chromium .....	17 to 20
Nickel .....	7 to 10

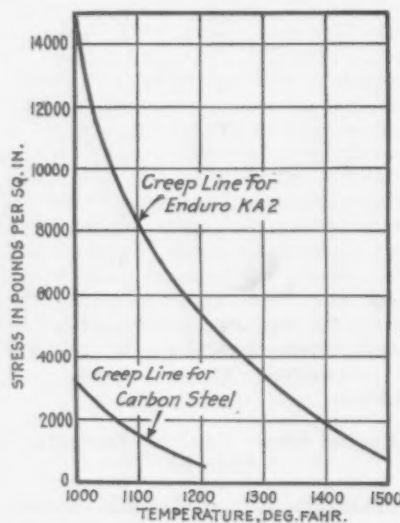
Trade literature from these companies emphasizes the importance of homogeneity in the finished product, reached by close chemical control in the furnace, proper ingot and rolling practice, and correct final heat treatment. Recommended "annealing" is: heat and soak at 2150 deg. Fahr., and water quench.

The development division of Central Alloy Steel Corporation is authority for the statement that these low-carbon chromium-nickel stainless irons or steels have greater resistance to most corroding mediums than the straight chromium alloys. They are particularly suitable for resisting corrosion and retaining their strength and shape at high temperatures. Since they are austenitic alloys, they do not air harden after any heating (partial or complete) during fabrication, nor is there a hardened region produced alongside a welded joint. Normal hardness is Brinell 130 to 145. Welding by either gas or electricity is said to be very simple, and when proper rods are used (now procurable) the welded joint has excellent corrosion resistance and physical properties. Repeated heatings and coolings do not cause coarse crystallization or embrittlement. Impact strengths are unusually high (Izod 115 to 120).

Such fabrication qualities have caused these chromium-nickel stainless alloys to be favored in Germany for chemical plant equipment, brewery and

dairy machinery and seamless milk cans and beer barrels.

Dr. W. H. Hatfield quoted chemical analyses and physical properties of three similar austenitic steels in his address before the American Iron & Steel Institute last fall (see THE IRON



Creep Strength of High Chromium-Nickel Steel

AGE, Nov. 8, 1928, page 1164). While the physical properties cannot be changed much by heat treatment, cold working into the form of bars and wires will increase the hardness and tensile strength materially.

Creep strength of Enduro KA2 and of mild steel is shown in the figure, as determined by Prof. F. H. Norton of the Massachusetts Institute of Technology. "Creep strength" is defined

## Less Building Construction in February

Construction contracts awarded in February in the 37 States east of the Rocky Mountains totaled \$361,274,000, or 12 per cent less than in January and 22 per cent less than in February, 1928, according to the F. W. Dodge Corporation. There were four fewer business days than in January and one less than in February a year ago.

Residential buildings accounted for 36 per cent of the total, which is slightly less than has been the case in recent months. Commercial buildings took up 19 per cent, public works and utilities, 16 per cent, and industrial projects, almost 16 per cent of the total.

For the first two months of the year new construction work has amounted to \$771,242,000. This is a reduction of 14 per cent from the \$892,500,000 of the first two months of 1928. New projects contemplated, reported during February, totaled more than \$772,000,000. This was 6 per cent less than the amount reported in January and 18 per cent below a year ago.



# Scrap Institute to Adopt Business Code

Trade Practice Conference with Federal Trade Commission Will Lay  
Groundwork for Better Relations with Consumers

**T**HE Institute of Scrap Iron and Steel, which within the past eight months has grown from a mere handful of members to more than 300, embracing 11 chapters in industrial centers from the Atlantic Coast to Chicago, held its first annual conference Thursday, March 7, at the Hotel Pennsylvania, New York, and outlined an ambitious program for accomplishment within the next year.

A committee on trade relations was authorized, which will work for the elimination of unfair practices in the industry, and a resolution was adopted requesting the Federal Trade Commission to call a national conference of the iron and steel scrap industry for the purpose of drawing up a set of rules of business conduct. This conference will be held soon after May 1.

Another committee will study costs of doing business in the industry and will gather statistics of consumption and supply of scrap. Its aim is to lay the facts before the members in a way that will eliminate speculation so far as possible in the buying and selling of scrap.

A committee also was appointed to work with the Federal Government in the conservation of iron ore resources.

A traffic committee will study a plan for the removal of inequalities in the freight rate structure as it applies to iron and steel scrap.

## May Establish Insurance Company

An insurance committee will study the advisability of forming an insurance company for the scrap dealers, who, it was stated, pay more than \$3,000,000 annually for their casualty insurance alone.

Further, the institute provided for the appointment of a national advisory council, consisting of officers and members of the executive committees of the 11 chapters, created a national membership committee and set up a committee on specifications to recommend changes, if advisable, in the classifications of iron and steel scrap.

The by-laws of the institute were amended so that arbitration of disputes between members becomes compulsory, whereas heretofore it was voluntary.

Departments of the institute which have recently begun to function are the traffic, arbitration and insurance bureaus. Joseph G. Hitner of Philadelphia, president of the institute, in his opening address, reviewed the work which these bureaus are performing for members.

Benjamin Schwartz, director gen-

eral of the institute, discussed the relations of dealers with consumers of scrap, the relations of dealers among themselves and the internal organization of the institute. On the subject of relations with consumers he said:

"The whole problem of the relations of dealers with consumers has been confused by misunderstanding, suspicion, fear, lack of confidence and the absence of a responsible organization to represent the dealers. It is hoped that the progress of the institute for the setting up of a code of business practice, with the cooperation of the Federal Trade Commission, and backed up by a strong organization, will restore these elements which have been lacking.

## Declares Scrap Dealer Essential to Industry

"There is no industry in America where the middleman is so necessary as in the scrap industry. Although the consumers of scrap have a tremendous respect for the commodity, they fail to show the same consideration for the man that supplies the commodity. While the scrap iron dealers, through their application for a conference with the Federal Trade Commission, may admit that certain abuses that have inevitably arisen out of chaos and undisciplined competition are unfair, at the same time it is a question whether the mills are entirely blameless in bringing about these conditions. I say that there must be some middle ground on which both groups can meet.

"The mills must learn that the scrap iron dealer is entitled to a fair return for his service; otherwise there is no incentive to gather the scrap. It is my conviction that the mills will learn, if they haven't already, that they cannot compete with the dealer for scrap at the same sources and still expect the dealer, with expensive equipment compelled to be idle, to render that service in emergencies and throughout the year which they have demanded and which they will expect.

## Old Methods Mean Losses

"The dealer, on the other hand, must learn that the foundation for his business is service to the mill and profit for himself, and that the continuation of the old methods of doing business means losses and injury to the consumer. Both must learn that the interests of mill and dealer are identical. Out of this understanding between the two groups must come recognition, equality of discussion and adjustment of difficulties.

"With scrap in greater demand, due

to its time and money-saving qualities in the manufacture of steel, with a diminishing supply of iron ore which must be conserved, a responsibility colored with national interest is imposed upon both mill and dealer. The best interests of dealers and consumers lie in an open market where the law of supply and demand is the only guide. A strong organization of dealers will aid in assuring a continued flow of this important raw material to the steel mills in the quantity and quality needed. This is fundamentally the program of the Institute of Scrap Iron and Steel."

Discussing the trade practice conference to be held with the cooperation of the Federal Trade Commission, Mr. Schwartz said that it is expected that the scrap consumers will be invited to discuss the program, with the hope that this may be the basis for a later conference between dealers and consumers for the purpose of eradicating differences which have arisen because of lack of good faith and fair dealing in some instances.

## Large Profits from Speculation No Longer Possible

Declaring that the opportunity for the scrap dealer to make large profits from speculation has long since passed, Mr. Schwartz said that "the only way to make consistent profits, with competition as it is today, is to look to his buying and to figure his costs. It is evident to me, if it isn't to the members of this industry, that the dealers are chasing each other in a wild circle, and that the all-consuming desire to handle great tonnages without regard for profits is not only netting losses, but, what is most important, is compelling the steel mills and other consumers to foot the bill in the end. As long as steel mills can change the percentage of pig iron and scrap in their mixture, as long as the hand-to-mouth policy of buying prevails among them, as long as they can stay out of the market at their own free will, as long as the law of supply and demand governs this business, so long will there be little profit in speculation. The institute has before it a tremendous opportunity and a great responsibility to educate the industry to look to its buying and to figure costs and profits with each purchase."

## Suggests Mergers of Scrap Yards

In addition to recommending a study of costs of handling scrap, Mr. Schwartz called attention to the possibility of correcting some conditions



of over-competition by mergers of scrap companies. "In many cities," he said, "one will find scrap yards adjacent to each other competing for the same business with profit for none. In one city I find as many as five yards within a short radius, each of which has equipment that is idle, in each of which the overhead continues regularly and in each of which only a part of the fleet of trucks is gathering scrap. In such cases it would seem that intelligent discussion of the possibilities of merger may result in capacity production of scrap, ability to deliver large tonnages and some profit, due to the reduction of overhead."

Carlyle H. Strand of Washington, author of a paper on "How Use of Scrap Is Increasing," which appeared in THE IRON AGE of Feb. 14, page 471, discussed his findings as to the consumption of scrap in the United States.

Frank Parker of Briggs & Turivas, Chicago, and president of the Chicago chapter, presided at the morning meeting, and David Pollock of Pottstown, Pa., presided at the afternoon session.

Charles Bock, Buffalo, was toastmaster at the banquet, at which the principal speakers were Commissioner William E. Humphrey of the Federal Trade Commission; Moses H. Grossman, New York, honorary president American Arbitration Association; Mr. Schwartz, the institute's director general, and Joseph G. Hitner, Philadelphia, its president.

To provide revenue for its increasing activities, the institute approved the doubling of the annual dues. It will immediately move to larger offices in the Salmon Tower Building, New York, to provide space for the work of its various bureaus and committees.

Frank Parker of Briggs & Turivas, Inc., Chicago, president of the Chicago chapter, was elected a vice-president of the institute, and the following were elected to the board of directors: J. V. S. Bishop, Bishop & Co., Philadelphia; Charles Bock, M. Bock & Sons, Buffalo; Michael V. Bonomo, L. Schiavone & Bonomo Brothers, Jersey City, N. J.; John R. Briggs, Henry Potts & Co., Philadelphia; Ben Cohen, Louis Cohen & Son,

Wilkes-Barre, Pa.; George B. Doane, Perry-Buxton-Doane Co., Boston; Charles Dreifus, Charles Dreifus Co., Pittsburgh; Stanton L. Dreifus, S. Snyder Corporation, New York; Joseph G. Hitner, Henry A. Hitner's Sons Co., Philadelphia; Allen R. Hoffer, Allen R. Hoffer & Co., Philadelphia; N. H. Jacobs, Buffalo House Wrecking Co., Buffalo; Frank Parker, Briggs & Turivas, Inc., Chicago; David Pollock of Mayer Pollock, Pottstown, Pa.; W. J. Ross, Hyman-Michaels Co., Chicago; Morris Schapiro, Boston Iron & Metal Co., Baltimore; Jacob Simon, Simon Iron & Steel Co., Lansing, Mich.; David Strauss, Continental Iron & Steel Co., New York; Morris Speer, Rotter-Speer Co., Cleveland; Ike Wilkoff, Wilkoff Co., Youngstown; William M. Hilb, Hilb & Bauer, Cincinnati; Samuel Jacob, Jacob Brothers, Bridgeport, Conn.; Thomas F. Kelly, Brooklyn; Aaron Lippman, New York Scrap Iron & Steel Co., New York; Alex. Luria, Luria Brothers & Co., Reading, Pa.; Max Meltzer, Hausman & Wimmer Co., New York; Herman D. Moskowitz, M. Samuel & Son, Inc., Brooklyn.

## Federal Trade Commission Not "Winking" at Price Fixing

Nor Is It Condoning Any Other Unlawful Practices in Business, Says  
Commissioner Humphrey in Address at Scrap Meeting

THAT the Federal Trade Commission is inclined to look with a friendly eye or unseeing eye on price fixing was declared to be absolutely baseless by Commissioner William E. Humphrey of that body at the annual banquet of the Institute of Scrap Iron and Steel at the Pennsylvania Hotel, New York, Thursday evening, March 7.

"Of late there have been persistent whispers and confidential rumors to this effect," said the commissioner. "Never in the history of the commission," he added, "has violation of the law met with stronger condemnation than it has today. Never have so many complaints been issued as are being issued today. There is less excuse for violation of the anti-trust laws than ever before. Recent decisions of the Supreme Court of the United States have cleared away many of the doubts and uncertainties as to the meaning of the laws. Never has the path been made so plain to the honest business man. For this reason, never has the commission regarded with so little tolerance or patience the violation of the anti-trust laws.

### Not Inclined to Deal Gently with Law Violations

"I hope that what I have said will help to clear the atmosphere of insinuations and rumors and misunderstandings that the Federal Trade

Commission is winking at anti-trust violations and is inclined to deal gently with them and especially with price fixing. The purpose of the commission is to prevent unfair methods of competition in business, as they affect both the competitor and the public. The commission believes that one of the most effective ways to protect the public from unfair practices is to help business to get rid of such practices. The trade practice conference is the cooperation of the commission with an industry as a whole to rid itself of any unfair practice. This plan may be defined as one to give an industry an opportunity to clean its own house. In an industry where dishonest practices prevail it is a plan to give the industry an opportunity to achieve decency instead of having the Government thrust decency upon it."

Commissioner Humphrey explained that from a legal standpoint these trade practice conferences and agreements do not increase or diminish the jurisdiction of the commission, nor do they take away from those participating in the conference any right, privilege or immunity. An agreement of an industry does not make anything lawful that is unlawful. He added:

"We want to protect the public. We want to help honest business. America has declared for competition, but that competition must be fair. I feel that there has been a tremendous improvement in the conduct of business

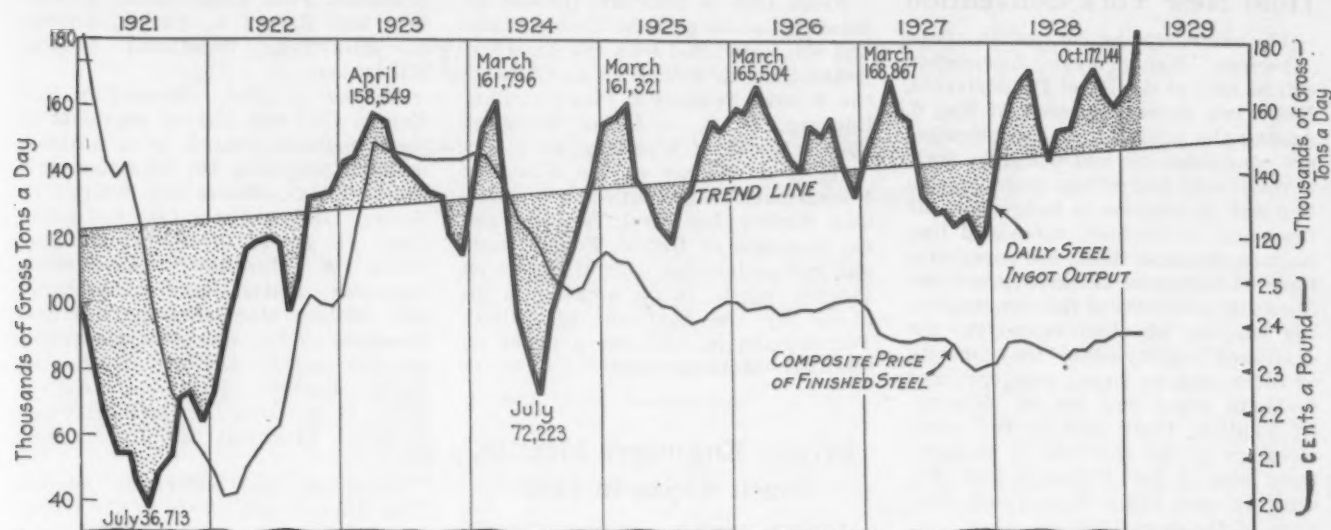
in this country during the last few years. But the time has not come—and I regret to say it seems far off—when the strong arm of the Government will not be needed to protect the public from monopoly, fraud and unfair practices. The percentage of crooked business is small, but the aggregate is far greater than it should be."

### Does Not Favor Licensing System for Associations

Contrary to recent reports from Washington, the commission does not favor a Federal licensing system for associations or corporations, Mr. Humphrey said. Such a suggestion was made in a report of the economic division of the commission and was merely transmitted to the United States Senate without the recommendation of the commission. He said that the impression that the commission favored such a licensing system had created much concern in the business world.

The Rochester Gas & Electric Corporation, Rochester, N. Y., will build 37 additional coke ovens at its Platt Street plant, to have a capacity of 60,000 tons of coke annually. They will bring the company's total coke capacity to 240,000 tons a year. Work will start in the near future and the addition is scheduled to be completed by Jan. 1, 1930.

Ingot Production in February Was at the Highest Daily Rate Ever Reached. The trend line shows a normal growth of about 1,013,000 tons a year. Prices in February were 3 per cent better than at midyear of 1928



## Steel Ingots Make New High Record

February Output at Highest Daily Rate Ever Reached—Average for First Two Months Was Higher Than for Any Previous Single Month

**P**RODUCTION of steel ingots in February not only made the highest total tonnage for the second month of any year, but made the highest daily average for any month yet reached. This followed a January production which was the highest for the first month of any year and both followed a record-breaking year in 1928.

Figures of the American Iron and Steel Institute show total production in February of 4,324,759 gross tons, based on reports from companies which made 94.68 per cent of the total 1927 output. With 24 working days, this gives 180,198 tons daily. Only two months in previous years had reached 170,000 tons, both of them being in 1928. April, with 172,103 tons, and October, with 172,-

144 tons, were successively the previous most recent high records. Both those figures are exceeded by the average for the 51 working days of January and February, which was 172,826 tons.

While the total production of the short month has been exceeded several times in months of greater length, nevertheless the February output was the sixth largest ever reached in any month.

Only two months of the past 13 (June and July of last year) have shown less than 4,000,000 tons. But only 13 months in all preceding years had reached that amount.

Both open-hearth and Bessemer steel showed gains in daily output compared with January, although both had lower total production. The

open-hearth steel, at 3,605,403 tons, made much the highest daily average of any month in our history. It represented an increase of 9 per cent over February, 1928, itself a large month, whereas the Bessemer output last month was 6 per cent less than a year earlier. For the two months elapsed, open-hearth production compared with a year ago shows a gain of 11 per cent, against less than 2 per cent gain for Bessemer.

Electric and crucible steel ingots, no longer reported monthly by the institute, made an average daily total of 1219 tons in 1927—the last year for which data are available. A figure of some such magnitude, to allow for ingots made by the electric or crucible process, should be added to the daily output figures given above if comparisons are to be made with earlier years, such as are shown in the diagram at the head of this page. It is significant, however, that, even without this addition, the latest figures are above all earlier ones.

PRODUCTION OF OPEN-HEARTH AND BESSEMER STEEL INGOTS (GROSS TONS)

	Reported by Companies Which Made 94.68 Per Cent of the Steel Ingots in 1927		Calculated Monthly Output All Companies	No. of Working Days	Approximate Daily Output All Companies
1928 Months	Open-Hearth	Bessemer			
January .....	3,280,247	498,746	3,991,332	26	153,513
February .....	3,308,728	521,366	4,045,304	25	161,812
Two months..	6,588,975	1,020,112	8,036,636	51	157,581
March .....	3,700,411	567,309	4,507,520	27	166,945
April .....	3,509,637	564,039	4,302,573	25	172,103
May .....	3,397,631	581,949	4,203,190	27	155,674
June .....	3,016,487	527,351	3,742,964	26	143,960
July .....	3,075,247	533,550	3,811,573	25	152,463
August .....	3,386,750	569,436	4,178,481	27	154,759
September .....	3,381,917	545,015	4,147,583	25	165,903
October .....	3,802,396	598,227	4,647,891	27	172,144
November .....	3,441,985	590,796	4,259,380	26	163,822
December .....	3,308,872	496,726	4,019,432	25	160,777
Year .....	40,610,308	6,594,510	49,857,223	311	160,313
1929					
January .....	3,700,939	549,616	4,489,391	27	166,274
February .....	3,605,403	489,279	4,324,759	24	180,198
Two months..	7,306,342	1,038,895	8,814,150	51	172,826

In announcing the formation of the Forging Manufacturers Association, Grand Central Terminal, New York, in *THE IRON AGE*, Feb. 21, page 578, the name of the Pittsburgh Forge Co., Pittsburgh, was included in the membership of the new association. The Pittsburgh Forge & Iron Co., Pittsburgh, and not the Pittsburgh Forge Co., is a member.

More than 600 companies in the United States are now engaged in the manufacture of oil burners, according to a report issued by the Oil Heating Institute, New York.



## Management Association to Hold New York Convention

The annual spring convention of the American Management Association will be held at the Hotel Pennsylvania, New York, during the week of May 6. Among the subjects for consideration are consolidations and mergers; style in relation to budgeting; price fluctuation and its relation to budgeting; the functions, authorities, value and limitations of committees; the reverberations of industrial research; the functions and activities of the comptroller; the training of older employees for continued employment; the capacity of older men to learn; pensions; and fashions, style and art in industry. In addition, there will be the usual meetings of the Institute of Management and of the Financial and Executives' and Office Executives' divisions of the association.

As mentioned in THE IRON AGE of Jan. 24, page 290, the association's Marketing Executives' division will hold a conference at the Hotel Gibson, Cincinnati, April 3 and 4. The general subject will be "What's Around the Corner in Marketing?"

## To Present British Exchange Paper Before Foundrymen

Frank Hudson, chief metallurgist Glenfield & Kennedy, Ltd., Kilmarnock, Scotland, has been chosen by the Institute of British Foundrymen to present the annual exchange paper before the 1929 convention of the American Foundrymen's Association, at the Stevens Hotel, Chicago, April 8 to 11. This paper is to be one of a series initiated in 1921 on agreement between the British and American associations, and into which later the French and Belgian foundry associations entered.

Mr. Hudson is one of the best known of the younger British metallurgists. He was educated at Rutherford College, Newcastle-on-Tyne, England, and holds a first class certificate in iron and steel manufacture from City and Guilds of London Institute. He served an apprenticeship as a practical metallurgist with Armstrong-Whitworth & Co., under H. H. Ashdown and Oliver Smalley on armament and general engineering work. At the age of twenty Mr. Hudson was given his first executive position as melting manager at the Close Works Iron Foundry of this company, and, while holding this position, he made a special study of cupola problems and the production of refined iron and high duty cast iron for Diesel engine and locomotive work.

In 1924 Mr. Hudson was appointed metallurgist to the Government of Tibet to supervise the installation and manufacture of electric steel at Lhasa, but was advised at the last minute by the British Government not to go to his new post. The expedition to Tibet came to a very untimely end. The convoy was massacred, and the hydroelectric installation and furnace

were thrown over the nearest precipice.

From 1925 to 1927 Mr. Hudson resided in Canada and the United States and was associated with the American Brake Shoe & Foundry Co., Chicago; the Warren Foundry & Pipe Co., Phillipsburg, N. J., and the Wyoming Shovel Works of Wyoming, Pa.

He is a member of the American Foundrymen's Association, the American Society for Steel Treating and the Institute of British Foundrymen, and has contributed several papers on foundry topics, being awarded a diploma by the Institute of British Foundrymen in 1928 for a paper on "Scottish Molding Sands."

## British Engineers Meet in South Africa in 1930

Various mining, metallurgical and geological societies in the British Empire join at three-year intervals in holding Empire Mining and Metallurgical Congresses. The next such gathering will be held in South Africa, March 24 to May 9, 1930. The South African Institution of Engineers and the Chemical, Metallurgical and Mining Society of South Africa will act as hosts. Proposed tours, starting at Cape Town, will reach as far north as the Belgian Congo, where are located the rich copper mines of so much future promise. Gold deposits on the Rand and diamond mining at Kimberly will be inspected. Victoria Falls and many localities of famous engagements during the Boer War are also en route. Approximate cost of the tour in South Africa is estimated at \$700. Information and illustrated booklets are available from the secretary of the congress, Box 4604, Johannesburg, Transvaal, Union of South Africa.

## Industrial Education Is Metal Trades Subject

Industrial education, especially as it relates to training apprentices, foremen and conference leaders, was the main theme of the annual meeting of the Cincinnati branch of the National Metal Trades Association, held at the Hotel Sinton, Cincinnati, on March 7. At an afternoon symposium on this subject, Louis Ruthenburg, vice-president General Motors Truck Corporation, Pontiac, Mich., and chairman of the industrial education committee of the national association, emphasized the fact that the training of foremen and of apprentices are coordinate activities and are of equal importance. He told of the work that the national organization is doing along this line and related some of the difficulties that the management must overcome in conducting a successful training course for apprentices and for foremen.

At the banquet Thursday evening the speakers were Harold C. Smith, Chicago, president of the National Metal Trades Association; J. G. Ben-

edict, vice-president Landis Tool Co., Waynesboro, Pa.; Harold S. Falk, president Falk Corporation, Milwaukee; and Robert L. Cooley, director of Milwaukee Vocational Schools, Milwaukee.

Charles H. Fox, Ahrens-Fox Fire Engine Co., was elected president of the Cincinnati branch at a business meeting preceding the afternoon program. Other officers are George A. Seyler, Lunkenheimer Co., vice-president; H. A. Feldbush, Worthington Pump & Machinery Corporation, treasurer; and George Schiele, Cincinnati Milling Machine Co., secretary. Members of the executive committee are Richard E. LeBlond, R. K. LeBlond Machine Tool Co.; August Marx, G. A. Gray Co.; and Frederick V. Geier, Cincinnati Milling Machine Co.

Following the afternoon session E. L. Heusch, supervisor of the trades and industries department of education, Columbus, Ohio, presented conference leadership certificates to the following executives: William Spreen, Ahrens-Fox Fire Engine Co.; J. P. Green, Aluminum Industries, Inc.; Charles Otte and J. G. Spann, American Tool Works Co.; J. A. Mitchell, Cincinnati Bickford Tool Co.; Joseph Nacke, Cincinnati Bickford Tool Co.; R. A. Poeppelmeier and Carl Frank, Cincinnati Milling Machine Co.; Joseph Meinberg, King Machine Tool Co.; E. H. Frick and J. N. Lewis, Worthington Pump & Machinery Corporation.

## Trade Practice Committee of Gray Iron Institute

The Gray Iron Institute, Cleveland, has announced the appointment of a trade practice committee, which will function as a subcommittee of the merchandising committee of which Don McDaniel, Decatur Casting Co., Decatur, Ind., is chairman. The trade practice committee is composed of Ralph M. Hill, chairman, East St. Louis Castings Co., East St. Louis, Ill.; Thomas W. Pangborn, Pangborn Corporation, Hagerstown, Md.; Chester A. Peebles, Stedman's Foundry & Machine Works, Aurora, Ind.; E. L. Wieland, Milwaukee Gray Iron Foundry Co., Milwaukee, and W. J. Maton, Waterbury-Farrel Foundry & Machine Co., Waterbury, Conn.

The personnel of the research committee has been completed by the addition of R. D. Phelps, Francis & Nygren Foundry, Chicago.

## New York Steel Treathers to Hold Smoker

New York steel treathers are looking forward with keen interest to the annual dinner-smoker which, it is announced, will be held Monday, April 1, at 6.30 p.m., on the roof of the Hotel McAlpin. Some surprises in vaudeville features are promised, and tickets can be obtained from J. Gordon Bell, Central Alloy Steel Corporation, 1 Pershing Square, New York.



# Steel Institute Files Tariff Brief

## Asks for Clearing Up of Indefiniteness in Metal Schedules— Bethlehem Appeals for Free Entry of Manganese Ore

WASHINGTON, March 12. — The American Iron and Steel Institute has filed a supplemental brief with the subcommittee on metals of the House Ways and Means Committee, which is considering the mass of tariff testimony in preparation for the revision which will be presented to Congress at its special session called by President Hoover for April 15. The revised tariff bill will probably be presented between April 15 and 20, according to Chairman Hawley of the House committee.

The institute dissents from recent decisions of the courts of customs appeals, citing a number of cases which might have been avoided if the terms of the Fordney-McCumber act had been less indefinite. It is stated that in the iron and steel schedule are many instances of different rates of duty laid upon different articles without any substantial economic reason therefor. It is suggested that the same rates of duty be applied upon articles of the same general value or stage of manufacture. Two outstanding instances cited are the decisions on sheet steel piling and concrete reinforcing bars, wherein these products were admitted at rates of duty which the institute believes were not intended by the framers of the bill. A change in phraseology in several instances, it is declared, would simplify the administration of the measure.

The institute's brief is as follows:

Your attention is respectfully requested to the court decisions hereinafter mentioned, the effect of which has been to frustrate what was the undoubted intent of the Sixty-seventh Congress in enacting the Tariff Act of 1922. What is meant by this is that, whereas the Tariff Act of 1922 prescribed certain duties in paragraphs 304, 305 and 312, the Court of Customs Appeals has made rulings, the effect of which is to transfer commodities to other paragraphs at lower rates of duty.

For example, paragraph 304 prescribes specifically for steel bars, steel shapes and steel plates, and what were deemed appropriate rates of duty were fixed by Congress upon such commodities.

Nevertheless, in a case reported as *United States vs. Frank* (15 Court of Customs Appeals 97; T. D. 42184), steel sheet piling, which had been assessed for duty by the collector under the provision in paragraph 304 for steel shapes, was held dutiable under the provision in paragraph 312 for steel structural shapes not specially provided for at the absurdly low rate of duty of 1/5 of 1c. per lb. This piling is driven into the ground in

the course of foundation work on buildings and other structures and it was for this reason that the court held the piling to be structural shapes.

### Criticizes Decision on Reinforcing Bars

Again, in the cases reported as *United States vs. Exstein* (T. D. 43079), *United States vs. Ash* (T. D. 43088), *United States vs. Anderson* (T. D. 43093), the Court of Customs Appeals held that steel bars, which are specifically named in paragraph 304, were entitled to entry at the low rate prescribed in paragraph 312 for steel structural shapes, upon the ground that they had been twisted or corrugated for the purpose of being imbedded in concrete work on structures. In other words, because they had been advanced from the condition of steel bars by additional labor and expense, they were permitted to enter at a fraction of the duty that Congress prescribed for them in paragraph 304.

Again, in the case reported as *Soule vs. United States* (T. D. 42909), the importers contended that universal mill plates, which were to be fashioned after entry into tops and bases for columns, were entitled to entry as structural shapes and, this claim being denied by the Customs Court, an appeal was taken to the Court of Customs Appeals. The latter court has just now (Feb. 16, 1929) overruled the contention of the importers.

### Say Terms are Too Indefinite

The fundamental vice of paragraph 312 and the feature therein that has made possible these constructions which neutralize the legislation of 1922 has been the use in paragraph 312 of the loose, vague, indefinite terms, "structural shapes" and "building forms." That these terms are too vague and indefinite to be coupled with the lowest rate of duty in the iron and steel schedule is better realized when one observes that the term, "structural shapes," is not limited even to buildings. Steel bars, grates and channels used in the construction of a mash filter for a brewery; frames or girders for automobile chassis; iron pile protectors and wrought iron bars for use in the construction of skylights, all were held to be entitled to entry under the tariff provision for structural shapes. It is manifest that the presence of these vague terms, carrying an extremely low rate of duty, is and always will be a temptation to secure the entry of merchandise at lower rates of duty than Congress contemplated.

As stated before, the fundamental vice of paragraph 312 is that it has phrases that are in the nature of basket or residuary clauses at the same rate of duty as that imposed upon the crudest form of iron and steel products. In framing a tariff law the residuary clause should never be at a lower rate of duty than that imposed upon the articles specifically mentioned. As a matter of good administration and in order to carry out the intent of Congress, we strongly urge

the elimination from paragraph 312 of the phrases, "structural shapes" and "building forms," leaving therein, if the committee should so desire, the specific provisions which are there now.

### Asks For Readjustment

Of course, there is no economic reason why steel sheet piling or concrete reinforcement bars, or any of the other articles mentioned above, should be excepted from the provision where they naturally belong. Therefore, what we are asking for here is simply and literally a readjustment, the sole purpose of which is to effectuate the intent of Congress in enacting the Tariff Act of 1922.

The same arguments and considerations apply to a case which arose under paragraph 305, the concluding proviso of which levies certain additional duties on steel "containing molybdenum and tungsten." It had been the practice of the Treasury Department to assess this additional duty on any steel containing either molybdenum or tungsten, and a decision of the Customs Court (T. D. 40005 G. A. 8741) affirmed the correctness of this assessment. Some time later, however, other importers took up the matter and carried it to the Court of Customs Appeals and that court held that the law should be taken literally and no steel should take this additional duty unless it contained both molybdenum and tungsten. Reference to the proceedings in Congress at the time this paragraph was under consideration shows that the purpose of Congress was to levy these additional duties where either one of these alloys was present, and it is suggested that paragraph 305 be amended so that the additional duties shall be imposed upon any steel containing molybdenum or tungsten, or both.

Also, arising under paragraph 305 were cases involving finished steel tubes containing chromium and forged drawplates containing chromium. In the case of the tubes, the Court of Customs Appeals held in *United States vs. Downing* (T. D. 41702) that, although the tubes as tubes were finished, they nevertheless fell within the designation "steel" for the reason that they were intended to be used as raceways for ball bearings.

On the other hand, in the case of the drawplates, the Customs Court held in T. D. 42728, that as they were finished and ready for their ultimate use, they were articles made of steel and not steel in the form of material, and hence did not take the additional duty for the chromium content.

### Change of Phraseology Would Simplify Schedule

There does not seem any real reason for this distinction and it is opposed to the general principle that more advanced articles of manufacture ought to take a higher duty than the material of which they are made.

It is suggested that the situation could be clarified by enumerating, in paragraph

305, the paragraph numbers which cover steel or steel articles to which the additional duties for alloy content should apply.

It may be said generally that in the iron and steel schedule there are many instances of different rates of duty laid upon different articles without any substantial economic reason therefor. The schedule might be greatly simplified, its administration facilitated, and costly litigation avoided if these fine-spun distinctions were abolished. This could be done either by changing the phraseology or by putting the same rates of duty upon articles of the same general value or stage of manufacture. It is understood that some suggestions of this character are being offered by the Government officials, and the institute stands willing to cooperate with them in accomplishing the desired result.

#### Asks Free Entry of Manganese Ore

A separate brief on manganese ore and ferromanganese has been filed by the Bethlehem Steel Co. "at the request and with the approval of the American Iron and Steel Institute." This brief goes into the manganese ore situation minutely and at length. Its recommendations are that the present duty on manganese ore, containing more than 30 per cent of metallic manganese, of 1c. per lb. on the metallic manganese be removed and that an ad valorem duty of 25 per cent be levied on ferromanganese in place of the present specific duty of 1½c. per lb. of contained manganese.

The Bethlehem company states that the American steel industry will have paid \$50,000,000 in duties alone on imported manganese ore in the period between Sept. 22, 1922, and Sept. 22, 1929, and that, in other words, the domestic steel industry has been taxed \$220 for every ton of domestic manganese ore produced since 1922. It says further:

Per ton of finished steel the duty cost is 27c. The proposed increase of the tariff on manganese ore would increase this duty per ton of finished steel to 44c. This is a very substantial tax. In the case of Bethlehem Steel Corporation it compares with Federal income taxes of 52c. per ton of finished steel; with State and local taxes of \$1.05 per ton of finished steel; with profit to our common stockholders of \$2.28 per ton of finished steel. In other words, the present duty of 1c. per lb. on the manganese contained in manganese ore is equivalent to a 54 per cent increase in our Federal income tax and represents about 12 per cent of our total net profit available to our common stockholders. The steel industry is operating generally on a very small margin of profit, and 25c. to 50c. a ton on its production is a very substantial item. Although manganese plays an essential part in steel making it is, after all, a comparatively small part of the entire manufacturing process, and a tax of 27c. a ton on such an operation is strikingly out of proper proportion.

#### Committees Begin Work on Bill

Preliminary work of revising the Fordney-McCumber tariff act was begun yesterday. The subcommittees of the House Committee on Ways and Means started the program by calling experts of the Tariff Commission into

conference for the purpose of analyzing the various schedules, and it is reported that rapid headway is being made. There are instances where only the chairmen of the subcommittees are sitting with the Tariff Commission experts, but in some cases other members of the subcommittees, together with the chairmen, are participating in the conferences. The subcommittees are made up exclusively of Republicans, in accordance with the previous policy of tariff making, whereby only the majority members are placed on subcommittees.

The specific line of tariff revision which President Hoover has in mind will not be made known until he presents his tariff message to Congress. But, as indicated in his inaugural address, he has gone on record in favor of limited revision. It is thought, however, that the agricultural schedule will be considerably revised by a rather widespread increase in duties and that there may be numerous and important changes in the administrative features. Otherwise, it is thought the changes will be relatively few and slight. Therefore the metal schedule

apparently will come in the latter category.

The record of testimony presented in connection with the metal schedule is being studied and analyzed, and it is believed that the subcommittee will be able in a comparatively short time to present the proposed revised schedule to the full committee.

Generally it is the present belief that the House will be able to dispose of the revised tariff bill by June 1. The Senate, it is now believed, can dispose of it within six weeks or so and on this calculation it probably would become a law about Aug. 1. There has developed an impression by reason of printed statements that the limited tariff legislation at the special session will be followed by a general revision program during the regular session in December. Such an impression evidently is not justified. On the contrary, it is believed that it is the purpose of the Hoover administration to dispose entirely of tariff revision at the special session and to have it out of the way in order to cause as little disturbance to business as possible.

#### Surface Combustion Buys Oklahoma Company

The Surface Combustion Co., Toledo, Ohio, manufacturer of gas burner and gas-fired furnaces for industrial purposes, has purchased the Webster Engineering Co., Tulsa, Okla. The Webster company makes a low-pressure gas burner for application in power boilers, oil cracking stills and heating boilers for large buildings. The burners may be applied to any commercial boiler or furnace installation without any changes in the boiler setting.

Offices and shops of the Webster company will be maintained at Tulsa and will be operated as a division of the Toledo company. The new officers of the purchased company are Henry C. Loebell, vice-president and general manager Combustion Utilities Corporation, president; Frank H. Adams, vice-president and general manager Surface Combustion Co., vice-president, and L. S. Reagan, general manager.

#### Large Terminal Warehouse Companies Are Merged

The National Terminals Corporation, Indianapolis, has acquired control of the Interstate Terminal Warehouses, Inc., Cleveland, and subsidiaries, including the North Pier Terminal Co., Chicago; the East Chicago Dock Terminal Co., East Chicago, Ind., and the Indiana Refrigeration Co., Indianapolis. The National Terminals Corporation has taken over the assets of these properties and will consolidate them into a chain of terminals serving both manufacturer and distributor. All kinds of manufac-

tured products and raw materials will be handled. The Interstate Terminal Warehouses, Inc., and the East Chicago Dock Terminal Co. have recently utilized their facilities in the handling of iron and steel products moving by water on the Great Lakes. William Hogan will continue as president and chairman of the combined companies.

#### Starts Tin Plate Mill on Pacific Coast

The Columbia Steel Corporation, San Francisco, started its new tin plate mill at Pittsburg, Cal., on March 12. The mill, which has an annual capacity of 40,000 tons, is the first tin mill unit on the Pacific Coast. Instead of the usual engraved invitation to the starting of mill the company used a piece of tin plate, 4 x 5½ in., upon which was printed the invitation to attend the ceremonies.

#### Baldwin to Sell Whitcomb Industrial Locomotives

The Baldwin Locomotive Works, Philadelphia, has purchased a substantial interest in the George D. Whitcomb Co., Rochelle, Ill., manufacturer of gas and oil-electric locomotives up to 100 tons in size, and has made arrangements to sell its products to railroads in this country and in foreign countries in which the Baldwin company maintains representatives. The plan will enable the two companies to build every size of steam, gasoline, alcohol, distillate, Diesel, gas-electric or Diesel electric locomotive.



# This Issue in Brief

Price-fixers will be severely dealt with, says Federal Trade Commissioner. Corrects impression that the commission will "wink" at price-fixing. Participants in trade practice conferences do not enjoy any special privilege or immunity.—Page 754.

\* \* \*

Heat treating to 960 deg. Fahr. and quenching in water markedly increases strength of aluminum alloy used in furniture fabrication. Artificial aging, by heating the metal to 420 deg. Fahr., adds stiffness.—Page 729.

\* \* \*

When redesigning for welding, don't copy the old design, says welding machine manufacturer. New design should take account of the particular advantages of steel.—Page 737.

\* \* \*

For high-strength brasses, use aluminum instead of tin, says investigator. Declares that the cheap metals, aluminum, iron and manganese, give the same effect as expensive additions. Aluminum confers the same benefits as tin, without the loss in ductility which occurs when tin content is higher than 0.7 to 1.5 per cent.—Page 740.

\* \* \*

Drop forging cleaning time is sharply reduced by continuous tumbling and pickling process. Forgings are tumbled in a barrel through which there is a continuous flow of pickling solution. Small alloy steel forgings are now cleaned in as short a time as 5 min.—Page 742.

\* \* \*

Hardening by nitration is best accomplished with aluminum steel, says French investigator. Plain carbon steel is made brittle by the action of ammonia. Low-chromium steels harden to a pronounced degree, while high-chromium steels are unaffected.—Page 538.

Reduces heat loss in normalizing furnace by insulating shafts, which convey the material through the furnace. When shafts are water-cooled, much heat loss results. The insulator is a metal disk filled with an insulating mixture.—Page 745.

\* \* \*

Cuts cost of handling scrap by transferring material direct from railroad cars into a chute just outside of foundry building. Chute delivers into a charging bucket mounted on a flat car, which is hand-pushed to the furnace.—Page 746.

\* \* \*

Strength at elevated temperatures and resistance to corrosion are properties of low-carbon chromium-nickel steel. It is said to resist corrosion better than straight chromium alloys, and can be fabricated and welded easily.—Page 752.

\* \* \*

Criticizes scrap consumers for eliminating the scrap dealer. Mills cannot compete with the dealer for scrap at the same sources and still expect the dealer to render service in emergencies, says Scrap Association head.—Page 753.

\* \* \*

Federal licensing of trade associations not favored by Trade Commission. Commissioner Humphrey says suggestion was submitted to Senate without recommendation of commission.—Page 754.

\* \* \*

New high record in steel ingot daily output was established in February. Record figure was 180,198 gross tons, 4.6 per cent above previous high.—Page 755.

\* \* \*

Considerable gain in electric rolling mill drives in 1928. Total horsepower is now over 2 million, and number of motors in this service is 1681.—Page 743.

Welds strong aluminum alloys used in furniture manufacture by using special welding wire, fluxes and baths. Welds develop over 75 per cent of ultimate strength of the metal.—Page 730.

\* \* \*

Spillage and other mechanical losses in handling hot metal at mixer and to open-hearth furnaces normally amount to 0.50 per cent of hot metal. But 0.80 per cent for spillage should be allowed where plants use large proportions of blown metal, as in basic duplex operations.—Page 733.

\* \* \*

Tack-welding for assembly and final welding by separate operators increase production of welded aluminum furniture. During assembling, parts are held in position by rigid jigs.—Page 730.

\* \* \*

Value of employee to his employer is sharply reduced under strain of financial worry. Old rule of discharge of employees whose wages are garnisheed is being modified, and today many employers are lending money to tide employee over emergencies, or are helping employee right himself by arranging settlement.—Page 761.

\* \* \*

Accident "repeaters" run up the accident rate. One large employer found that 25 per cent of his employees were responsible for 75 per cent of the accidents. Escapes from disabling hurts, as well as those which incapacitate, should be reported, so that every accident may be charged against an employee.—Page 762.

\* \* \*

Aging of aluminum and baking on enamel finish are done simultaneously. Temperature of slightly over 300 deg. Fahr. is found ideal for both operations.—Page 731.



A. I. FINDLEY  
Editor

# THE IRON AGE

W. W. MACON  
Managing Editor

ESTABLISHED 1855

## A Tariff Within Reason

JUDGING from some of the briefs filed with the Ways and Means Committee, a good many representatives of domestic industries consider that the main purpose of the coming extra session of Congress is an increase in tariff schedules all along the line. That has not been the understanding of those whose tariff platform puts the welfare of the greatest number before the interest of a few. The Fordney-McCumber tariff represented a general upward revision of duties on manufactures. What is in order now, as we were promised in the national campaign last year, is such reasonable amendment of the act passed in 1922 as is called for in the light of seven years' experience under it. If the fate of the Taft administration and its tariff act is at all in their minds, it should give pause to the aims of some at least who have gone to the Ways and Means Committee asking large increases in certain duties.

A number of changes in the metal schedule have been asked for by various manufacturers. Some of these are likely to be made, though it is evident that the Ways and Means Committee appreciates that by and large the tariff act of 1922 was amply protective and that no general revision should be made now. Highly important is the adoption of effective safeguards against undervaluation of foreign iron and steel products. While there are differences of opinion as to the use of American valuations in assessing ad valorem duties, a majority in the committee recognizes the necessity of making the duties of 1922 amply protective, whether by rewriting the administrative features or otherwise. American steel companies produce half the steel of the world in a country that has one-sixteenth of the world's population. European steel makers can have no claim to easy access to the American market, when fifteen-sixteenths of the people on the globe, a goodly proportion tied to Europe in colonial or other relations, are open to their cultivation.

One of the surprising requests for the amendment of the metal schedule is that which calls for a 50 per cent increase in the duty on manganese ore. We say surprising, since the feeling was very general that manganese as well as other metallic minerals had been dealt with most liberally in the tariff act of 1922. Previously manganese ore had been on the free list. Exponents of protection have never favored high duties on raw materials, nor have they thought of minerals or other raw materials as proper subjects for the imposition of rev-

enue-raising duties. Yet for nearly seven years imported manganese ore (making up over 90 per cent of the manganese ore used in the United States to make ferromanganese) has paid \$11.20 a ton on a 50 per cent manganese content. In that period more than \$40,000,000 has been paid into the Federal treasury as manganese duty.

We shall not repeat here, even in briefest summary, what has been brought out in long-drawn discussions of the manganese situation in the United States. Impartial Government experts have repeatedly reported what is well attested otherwise that only meager supplies of manganese ores suitable for the production of ferromanganese exist in the United States. Such ores as we have may well be conserved against the day of their possible employment in the national defense. Meanwhile, instead of imposing a high duty on the great volume of imported ore, let the Government pay a bounty on ferromanganese produced from domestic ore, this ferromanganese being also acquired by the Government and stocked against a national emergency. Such a plan would keep alive the small manganese industry we have, ready for expansion if need came. Moreover, the Government could amply provide for the proposed bounty by a duty materially less than that which today is a tax on every producer and consumer of American steel.

## New Steel Production Records

PRODUCTION of Bessemer and open-hearth steel ingots in January and February as reported by the American Iron and Steel Institute was 8,814,150 tons, a gain of 777,514 tons, or 9.7 per cent, over the corresponding months of last year, with the same total of fifty-one working days. It becomes worth while now to note the new production records being made for periods of 12 consecutive months. When the precise total is found for the calendar year 1928, the actual production in the 12 months to March 1 will figure approximately 800,000 tons greater.

The monthly production figures do not show the full total for a calendar year, as subsequently ascertained, for two reasons—because electric and crucible ingots are not reported monthly, and because somewhat over 5 per cent of the total capacity does not report monthly and has to be pro-rated. The companies reporting monthly produced 95.40 per cent of the total Bessemer and open-hearth output in 1926, but only 94.68 per cent in 1927, and the final ascertainment may show a lower percentage for 1928, whereby the prorating would have to be altered slightly. In

1927, electric and crucible ingots were equal to about seven-eighths of one per cent of the Bessemer and open-hearth output.

Making all allowances, total production of steel ingots in the 12 months through February, 311 working days, was probably in excess of 51,100,000 tons, making a still more substantial gain—about 9 per cent—over the 46,936,205 tons of 1926 than was made by the calendar year 1928.

The point is that about the middle of last year steel demand had a fresh impetus, thereafter running above its seasonal expectation relative to the first half of the year. This enhanced pace has been maintained thus far this year.

### Uphold the President

NO President has entered the White House of whom so much was expected in the solving of most vexing social, political and economic problems as is now expected of Herbert Hoover. With his super capacity for the administration of national and world affairs Mr. Hoover may be counted on to meet the reasonable expectations of thinking men. If there is disappointment, it will be among those who naively believe he can quickly set to rights things that have long been awry and who easily forget that the President is the executive and not the Congress.

Conditions are now most auspicious. We are at peace abroad; no violent dissensions exist at home. Employment at decent wages is general; most industries are making a fair profit for their stockholders, while the luxury industries are doing much more than that. Most of the ills of the body politic have grown up so gradually that their seriousness is only lately getting general recognition.

President Hoover, in the first part of his inaugural address, points out that "the most malign of all these dangers is disregard and disobedience of law." Whether this situation is a result of too many laws, or of some which do not square with the morals of the times, is beside the point. All citizens should remember that they elected the legislators who wrote those laws into the statute books and cannot therefore escape a share of the responsibility. On the other hand, contempt of the law may arise from the repeated spectacle of the law's delay, the multitude of dodges whereby a litigant of wealth may obstruct the ends of justice. A revision of court practice would help in this situation. Mr. Hoover favors such a change. Whether an engineer can get the lawyers to do this, in which they have so far failed to show much interest, cannot be told in advance.

But in all his efforts to enforce the laws which exist, to modify those that need to be changed, or to revise the administration of justice, the President can do nothing without the hearty cooperation of the people. As he pointed out, the bootleggers would be of small importance if they catered only to the criminals. We must awaken to the fact that when we traffic in liquor we aid and abet crime, we enrich the vicious elements, and are

not without stain from such events as the recent Chicago massacre.

### The Employee in Debt

A RULE, once common in manufacturing plants, that an employee whose wages are garnisheed may be summarily discharged, is continually being modified. Some firms have abolished it altogether. Instead there is a growing inclination to assist a man whose money troubles are not due to viciousness or incurable weakness of character, but to occasional or unavoidable circumstances.

It happens all too frequently that death, an operation, long sickness or domestic trouble, intensified with periods of unemployment, exhausts savings and piles up a crushing debt. Creditors press for payment and finally resort to law. The employer's cashier is bothered with legal writs, assignments of wages, and bill collectors.

Discharge is the easy way out for the paymaster, but it is no solution of the employee's problem. In fact, it prevents a solution about as effectually as putting the debtor in jail, a scheme once widely in vogue but now happily discredited.

The employee's foreman is responsible for this change in plant practice. The man threatened by his creditors may be, in normal circumstances, a steady, efficient worker of average or even more than average ability. Under the strain of financial worry the man's value has been sharply reduced, but the average foreman would hold that it is better to restore the employee's enthusiasm by sympathetic treatment than to throw the man out abruptly, thus disrupting production until a substitute can be found and trained. When the rumor gets about that "the company is standing behind John Smith, whose house burned down last week" the morale of the whole body of workmen is raised, and morale has come to be regarded as an asset, the same as good will.

When an employer interests himself in the case of a debt-ridden workman, creditors immediately become more reasonable. They are then dealing with a person worthy of confidence, and it is not difficult to arrange a settlement on the basis of systematic payments in small instalments. The cashier's office may at times cooperate by deducting the agreed amounts from the pay envelope.

One organization, employing several thousand men, handles cases of this character by the personnel supervisor. He appreciates that it is an essential of welfare work to investigate, in a personal and tactful manner, the affairs of the man involved in debt. Experience shows that it is fairly easy to agree upon some figure which represents the necessary living expenses for the delinquent and his family. Some arrangement is then made so that the balance of wages above this minimum is turned over each week to the creditor, or in extreme cases to the supervisor, who distributes it among the creditors. One such case handled recently was where an unworthy wife ran the husband into debt without his knowledge to the formidable total of \$800 and then ran away from him and their children. This employee is now well on the way toward the day when he will be free of all his financial worries. Cases



as strange as this are not so unusual as might be thought.

In recent years a new factor has entered into the problem of the poor man's debts. Formerly his only recourse if he must borrow money was the pawnbroker or the usurer, who bled him without mercy. A long step away from this came with the Morris Plan banks and similar companies, which loan money without collateral. Their security is the borrower's character and his ability to get two responsible persons to sign his note. Even more recently, some commercial banks have established departments for this kind of business, on the same basis of security and interest rate and without service charge or other fee.

The great success of the Morris Plan banks, the "acceptance corporations" handling instalment paper on automobiles, and the personal loan departments of the more conservative banking institutions shows that there is small risk in loss from the "average" creditor. He may buy more than he can afford, but his intentions are good. Astute personnel managers readily recognize this situation and act accordingly. Some industrial concerns have gone so far as to help valued employees out of the despond of debt by guaranteeing this form of personal loan, and found that the reaction was instantaneous and on the right side of the ledger. One manager drove debt out of his department by personally arranging with those of his people who had accumulated harassing obligations to take out a bank loan, and pay the debts with the money. This loan was then liquidated in the usual way by weekly payments extending for a year. His theory was that he would get better results if he were surrounded by employees whose minds were not cluttered up with worries, and the theory worked.

### Alloy Steel as a Tonnage Product

**T**HE rise of alloy steel as a tonnage product is being expedited by a growing appreciation of the need for proper balance between the carbon and alloy content to get the most out of the material. It has been found, for example, that a lower carbon content in combination with a higher percentage of alloy—in proper proportion—not only insures high strength and ductility, as well as adequate fatigue and other properties, but, more than that, calls for a simpler heat treatment.

A low-carbon steel with moderate additions of silicon and manganese—the so-called silicon steel—was used in large quantities in the Philadelphia-Camden bridge and will form a large part of the tonnage in the one now being constructed across the Hudson at New York. The much talked of medium-manganese steels, having low carbon and moderately high manganese, are finding many uses in parts for automobiles and locomotives. Rails of this steel, with as low as 0.50 per cent carbon, are winning widespread favor. One representative railroad uses this type of steel

entirely and a leading line is purchasing more of it each year, with others feeling their way. Fewer transverse fissures are among several advantages claimed for it.

A low-carbon, 3 per cent chromium steel rail is meeting with some success in England, with experiments in this country reported favorable. In Germany a new structural steel, low in carbon, chromium and copper, is heralded as superior to the once highly touted Freund steel.

Wider use of steels of this character, with new ones probably in the offing, and expanding demand for the high-chromium rustless and heat-resisting alloys, point in one direction—to larger and larger alloy steel output and the ultimate ushering in of "the alloy age."

### Accidents Which Do Not Injure

**S**AFETY engineers are paying much more attention than formerly to those incidents which because men have been in jeopardy should be classed as accidents. They are commonly disregarded because no injury has resulted of sufficient severity to demand dispensary treatment. A man falls down stairs and receives a few minor bumps. Another's sleeve catches in the running parts of a machine but the cloth is rotten and he tears himself free, unhurt. Still another steps on the point of an upturned nail but a stout sole prevents foot puncture. A splash of oil or soapy water on the stairs, the absence of a guard on a machine, someone's neglect to sand slippery spots in the yard—all are easy of correction if knowledge of their happening reaches the safety engineer.

Scores of such incidents could be cited. Escapes from disabling hurts are so common that they attract little attention, unless vigorous measures are taken to compel that they be reported. It is not always possible to enforce the rule. The most effective method, according to those who have had experience, is to hold foremen strictly responsible for the report of every accident, whether or not anyone is injured.

Every kind of accident should be charged to an employee on his card. Collateral data will allow intelligent study of his case, should he prove to be one of those known as repeaters. Men have had to be discharged because their accident records were so bad as to make it economically impossible to keep them. Some individuals, usually known among their fellows as unlucky, are victims of their own carelessness, recklessness, absent-mindedness or other want of mental balance.

One careful survey conducted by the Boston Elevated Railway showed that 25 per cent of its employees were responsible for 75 per cent of its accidents. It is not at all unlikely that a survey of the average manufacturing plant would show a somewhat similar ratio. Taking into account accidents which cause no injuries, the ratio might be even more unfavorable to the "repeater."

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*Schedule of the next instalments of the Business Analysis and Forecast, by Dr. Lewis H. Haney, Director, New York University Bureau of Business Research, follows: March 21—Position of Iron and Steel Producers; April 4—Activity in Steel Consuming Industries.*

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## Chrome Steel Works Reorganizes

### Passing of First Alloy Steel Maker—Canda-Gayley Steel Corporation to Operate Bar Mills and Ball Hammers

**D**IRECTORS of Chrome Steel Works, Carteret, N. J., have voted to discontinue operations and to liquidate assets. The first step in the latter process has been the sale of the present business and good will, together with a portion of the equipment, to the Canda-Gayley Steel Corporation. Abeel Canda is president and H. Clifford Gayley is secretary-treasurer of the new organization, these two men being important minority stockholders of the Chrome Steel Works, and having been active in the management of the old company. C. E. Meissner, for the past three years development engineer of the old company, will be sales manager for the new.

Passing of Chrome Steel Works has peculiar interest since it is the pioneer alloy steel manufacturer in the United States. It started operations in Brooklyn in 1869 to exploit the 1865 patent of Julius Baur, for making chromium by reducing chrome ore by carbon in the crucible, and its subsequent use as an alloying element. The alloy steel so made was used for rock crusher parts by the mining and quarrying industry, and for the manufacture of safes, bank vaults, and prison cells. In 1903 a 25-acre site was acquired at Chrome (now Carteret), N. J., the original plant at Brooklyn having been outgrown. The new plant contained two 25-ton acid open-hearth furnaces, a foundry, a 112-in. plate mill, a 21-in. blooming mill, 18-in. and 12-in. bar mills, a battery of steam hammers for making grinding balls, a 4000-ton press and forge shop, two tire mills, and a machine shop for roll shells and tires.

Operations at this plant reached a

maximum during the war, when the mining and cement industry were pressing for delivery of crusher and grinding equipment, and the mills were busy on ship plate. Since that time, however, changes in the consuming industries have caused gradual decline in output. Adoption of reinforced concrete for bank vault wall construction has reduced the metal required to the doors and frames—approximately 15 per cent of the total—and the quenched high-carbon grinding ball has been widely adopted for grinding ore and cement.

The Canda-Gayley Steel Corporation, therefore, will not operate the steel making or foundry department. It has purchased the bar mills (which will be electrified) and the ball hammers, and has taken a lease for sufficient space in the present premises. Business to be intensively cultivated will be in the field of light structural shapes and reinforcing bars rolled from rails, and in the manufacture of forged and heat treated high-carbon steel grinding balls.

### Argentina Is Large Buyer of Industrial Machinery

WASHINGTON, March 11.—Imports of industrial machinery into Argentina from the United States were valued in 1928 at \$8,576,015, an increase of 22 per cent over the 1927 total of \$7,026,432, according to a statement prepared by S. R. March, Industrial Machinery Division, Department of Commerce. With the exception of 1926, there has been a steady gain since 1922. The outstanding feature of the machinery trade of 1928 was the growth in imports of American oil well and refining machinery into Argentina, the total value for last year having been \$1,370,845, compared with \$614,191 in 1927.

Imports from the United States of steam engines, other than locomotives, fell off 42 per cent to \$294,085 in 1928 from \$514,368 in 1927, while imports of internal combustion engines more than doubled, rising to \$675,270 from \$312,666, this classification excluding engines not over 10 hp. Steam engines, other than turbines, were mainly responsible for this loss, imports under this head falling to \$47,600 from \$233,000. Most of the trade in internal combustion engines was in stationary and portable units,

other than gasoline locomotives and Diesel and semi-Diesel engines. This item alone accounted for a trade total of \$560,492.

A gain of 29 per cent in imports of metal-working machinery from the United States (\$524,614, against \$406,869) was due largely to the increased trade in portable tools, drills, reamers, taps, dies, etc. Imports of American taps, dies, screw-plates and pipe-stocks rose to \$118,908 from \$55,441.

Imports of industrial machinery from the United Kingdom into Argentina in 1927 totaled \$5,163,000, against \$4,424,000 in 1926, while those from Germany were \$6,211,000, against \$5,404,000.

### Labor Surplus Said to Be Problem of Future

CLEVELAND, March 12.—Engineering science has provided food, raiment and shelter to an extent hitherto unknown, said Magnus W. Alexander, president National Industrial Conference Board, New York, in an address before the Cleveland Engineering Society tonight.

"In spite of all the progress made, in spite of the wide distribution of prosperity, of wage levels which are the envy of European workers, of

28½ billion dollars of savings deposits in our banks, in spite of a perennial agricultural 'surplus,' there are always thousands living at or near the starvation line. Within the same city we may see factories idle, while men and women eager to work walk the streets looking for jobs, past warehouses stocked with merchandise.

"Such conditions, far from necessarily spelling bad times, evidently indicate an imperfect functioning of the business machine and of our economic life. To my mind, they present engineering problems of the greatest magnitude, problems, however, which must be worked out from within industry, not regulated from without. Some progress along this line is being made, largely through the instrumentality of industrial and trade associations and similar bodies striving for business stability; but I believe I am safe in saying that despite the progress made most business is still transacted in a haphazard way, that is by the trial-by-error route, by repeating what has proved profitable before with insufficient regard to changing circumstance.

"Engineering ingenuity has been able to cope with labor shortage; but industrial civilization may also have to cope with the problems of a labor surplus. The most urgent problems of the future are likely to arise from the need of adjustment between human life and mechanism, and in the consummation of this task the engineering profession of necessity will play a leading part. It is difficult to predict what humanity would do with its added leisure and increasing wealth; an entirely new grouping of the population may result. I do not believe that we ever shall have to fear that our natural resources will fail us; on the contrary, in the light of recent chemical and electrical engineering progress, it seems more probable that we have not even yet discovered some of our greatest and most valuable resources."

### Shrinkage in Car Building Shown By Census

WASHINGTON, March 9.—Reflecting decreases of 37 per cent in number and 23.1 per cent in value, establishments engaged primarily in the manufacture, rebuilding and repair of railroad cars in 1927 built 61,766 steam and electric cars, valued at \$205,144,809, compared with 97,966 cars, valued at \$266,629,968, built in 1925, according to the Bureau of the Census. These figures do not include cars produced in railroad repair shops and by a few establishments engaged primarily in other lines of manufacture.

About 5,000,000 lb. of copper is consumed annually in the manufacture of oil-burning installations for heating purposes and power production, according to a survey just completed by the Copper and Brass Research Association, New York.



# Iron and Steel Markets

## Shortage of Steel Handicaps Mills

Output of Finished Products Restricted By Supply of Semi-Finished Material—Overflow of Plate Tonnage From Chicago Reaches Other Districts

**P**RESSURE on the mills continues to increase and production of finished material is being handicapped by a shortage of semi-finished steel. In the Valleys the dearth of steel has caused interruptions in sheet and strip mill operations. At Chicago an unusually heavy demand for plates for railroad cars and electrically welded pipe has not only adversely affected output of some other forms of finished steel, notably sheets, but has caused an overflow of plate tonnage to mills farther east.

Despite the growing tenseness of the market situation, there is no evidence that consumer operations have suffered because of a lack of steel. Buyers, however, have low stocks and their concern about deliveries is reflected in heavy commitments with the mills. While some contracts have been closed at recently announced advances, present obligations on mill books, in many instances, will partly take care of second quarter requirements.

Some producers have permitted consumers to overspecify against contracts at current prices, and this has further swelled mill backlogs. Extended deliveries in certain products have caused buyers to become more dependent on warehouses for lots of prompt material to round out their supplies.

The heavy needs of consumers were reflected in steel ingot output in February which, at 180,198 tons a day, was at the highest rate on record. Notwithstanding the large shipments made possible by this production, unfilled orders of the Steel Corporation in February gained 34,854 tons.

With current output close to the practical capacity of steel furnaces, March is expected to set new records for both monthly and average daily production.

Among consuming lines the automotive industry again stands out because of further gains in its steel requirements. Leading motor car manufacturers, with three or four exceptions, are operating their plants at capacity and both March and the first quarter are expected to establish new high marks in output.

Demand for sheets and strips, although showing greater diversification, reflects to a high degree the activity in the automotive field. The leading sheet maker finds order receipts the largest for any week since early June, last year. Bookings of an outstanding independent since Feb. 1 have been at the rate of 150 per cent of capacity.

Another steel consuming line that is unusually active is machine tool manufacture. Production in nearly all machine tool plants has reached the limit of available man power, and several large tool makers report bookings so far this year double those for the

same period in 1928. Orders in February were the largest for any month since the boom of 1919-1920, and unfilled business on March 1 was equivalent to more than 60 days of output.

The large amount of pending fabricated steel work has been augmented by inquiries for 50,000 tons. The week's awards totaled 29,300 tons. The fabricated steel for four New York subway sections, 49,000 tons, is expected to be placed within a few days.

Line pipe orders include 12,000 tons of 8-in. seamless placed with a Pittsburgh mill by the Texas Corporation and 7000 tons of the same size given to a Valley producer by the Standard Oil Co. of New Jersey. Outside of line pipe, mechanical tubing and boiler tubes, business in tubular goods is disappointing, and competition for line pipe tonnage has been at the expense of prices.

The situation in tubular products only serves to emphasize the more favorable position of other finished materials. While there have been no widespread tests of recent advances on bars, plates, shapes and sheets, little consumer resistance has been encountered in connection with contracts placed thus far. In strip steel a considerable tonnage in second quarter commitments has been entered. Consumers of cold-rolled strip in narrow widths, however, are objecting strongly to the new card of extras, which raises their net prices \$4 to \$14 a ton above those ruling on contracts for the current quarter.

In primary materials price tendencies are mixed. The scrap market is colorless in most districts, and at Pittsburgh heavy melting grade has declined 25c. a ton. The shortage of Connellsville furnace coke has been relieved and prices have declined to \$3 a ton, wiping out the 10c. advance of a week ago.

Iron ore is headed for an advance of 25c. a ton, if present forecasts are borne out. The water movement of Lake Superior ore this year is expected to reach 60,000,000 tons, or more than for any season since 1918. The 1928 total was 54,000,000 tons.

Valley producers of pig iron have advanced their quotations 50c. a ton, and prices have a stronger tone in other areas, following the accumulation of substantial backlogs.

Makers of the commonly used ferroalloys find it difficult to keep abreast of demands upon them, and it has been necessary to allocate ferromanganese output among consumers.

Copper has gone up to 20c. a lb., delivered Connecticut Valley, the highest price since 1919, with sales for July delivery. March shipments into consumption are breaking all records.

# A Comparison of Prices

Market Prices at Date, and One Week, One Month and One Year Previous,  
Advances Over Past Week in Heavy Type, Declines in Italics

Pig Iron, Per Gross Ton:	Mar. 12, 1929	Mar. 5, 1929	Feb. 11, 1929	Mar. 13, 1928
No. 2 foundry, Philadelphia	\$21.26	\$21.26	\$21.26	\$20.76
No. 2, Valley furnace	17.50	17.50	17.50	17.25
No. 2, Southern, Cin'ti.	20.19	20.19	20.19	19.69
No. 2, Birmingham	16.50	16.50	16.50	16.00
No. 2 foundry, Chicago*	20.00	20.00	20.00	18.50
Basic, del'd eastern Pa.	20.25	20.25	19.75	19.50
Basic, Valley furnace	17.50	17.50	17.50	17.00
Valley Bessemer, del'd P'gh.	20.01	20.01	20.01	19.26
Malleable, Chicago*	20.00	20.00	20.00	18.50
Malleable, Valley	18.00	18.00	18.00	17.25
Gray forge, Pittsburgh	18.76	18.76	18.76	18.51
L. S. charcoal, Chicago	27.04	27.04	27.04	27.04
Ferromanganese, furnace	105.00	105.00	105.00	100.00

## Rails, Billets, Etc., Per Gross Ton:

O.-h. rails, heavy, at mill	\$43.00	\$43.00	\$43.00	\$43.00
Light rails at mill	36.00	36.00	36.00	36.00
Bess. billets, Pittsburgh	34.00	34.00	33.00	33.00
O.-h. billets, Pittsburgh	34.00	34.00	33.00	33.00
O.-h. sheet bars, P'gh.	35.00	35.00	34.00	34.00
Forging billets, P'gh.	39.00	39.00	38.00	38.00
O.-h. billets, Phila.	39.30	39.30	38.30	38.30
Wire rods, Pittsburgh	42.00	42.00	42.00	44.00
	Cents	Cents	Cents	Cents
Sklp, grvd. steel, P'gh, lb.	1.85	1.85	1.90	1.85

## Finished Iron and Steel,

Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Iron bars, Philadelphia	2.12	2.12	2.12	2.12
Iron bars, Chicago	2.05	2.00	2.00	1.90
Steel bars, Pittsburgh	1.90	1.90	1.90	1.85
Steel bars, Chicago	2.05	2.05	2.00	1.95
Steel bars, New York	2.24	2.24	2.24	2.19
Tank plates, Pittsburgh	1.90	1.90	1.90	1.85
Tank plates, Chicago	2.05	2.05	2.00	1.95
Tank plates, New York	2.17½	2.17½	2.17½	2.17½
Beams, Pittsburgh	1.90	1.90	1.90	1.85
Beams, Chicago	2.05	2.05	2.00	1.95
Beams, New York	2.14½	2.14½	2.14½	2.14½
Steel hoops, Pittsburgh	2.10	2.10	2.10	2.20

\*The average switching charge for delivery to foundries in the Chicago district is 61c. per ton.

On export business there are frequent variations from the above prices. Also, in domestic business, there is at times a range of prices on various products, as shown in our market reports on other pages.

Mar. 12, 1929	Mar. 5, 1929	Feb. 11, 1929	Mar. 13, 1928	
Sheets, Nails and Wire.				
Per Lb. to Large Buyers.				
Cents	Cents	Cents	Cents	
Sheets, black, No. 24, P'gh....	2.85	2.85	2.85	2.90
Sheets, black, No. 24, Chicago				
dist. mill.....	3.05	3.05	2.95	3.00
Sheets, galv., No. 24, P'gh....	3.60	3.60	3.60	3.65
Sheets, galv., No. 24, Chicago				
dist. mill.....	3.80	3.80	3.70	3.85
Sheets, blue, 9 and 10, P'gh....	2.10	2.10	2.10	2.10
Sheets, blue, 9 and 10, Chicago				
dist. mill.....	2.30	2.30	2.20	2.20
Wire nails, Pittsburgh.....	2.65	2.65	2.65	2.65
Wire nails, Chicago dist. mill.....	2.70	2.70	2.70	2.70
Plain wire, Pittsburgh.....	2.50	2.50	2.50	2.50
Plain wire, Chicago dist. mill.....	2.55	2.55	2.55	2.55
Barbed wire, galv., P'gh.....	3.30	3.30	3.30	3.35
Barbed wire, galv., Chicago				
dist. mill.....	3.35	3.35	3.35	3.40
Tin plate, 100 lb. box, P'gh....	\$5.35	\$5.35	\$5.35	\$5.25

## Old Material, Per Gross Ton:

Heavy melting steel, P'gh.	\$18.25	\$18.50	\$18.75	\$14.75
Heavy melting steel, Phila.	16.00	16.00	16.50	13.50
Heavy melting steel, Ch'go.	15.50	15.50	16.00	12.75
Carwheels, Chicago	14.50	14.50	14.50	14.00
Carwheels, Philadelphia	16.50	16.50	16.50	15.50
No. 1 cast, Pittsburgh	15.00	15.00	15.00	14.50
No. 1 cast, Philadelphia	16.50	16.50	16.50	16.00
No. 1 cast, Ch'go (net ton)	16.00	16.00	16.50	14.50
No. 1 RR. wrot., Phila.	16.00	16.00	16.00	15.00
No. 1 RR. wrot., Ch'go (net)	14.00	14.00	14.50	11.00

## Coke, Connellsville,

Per Net Ton at Oven:				
Furnace coke, prompt	\$3.00	\$3.10	\$2.85	\$2.60
Foundry coke, prompt	3.75	3.75	3.75	3.75

## Metals,

Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Lake copper, New York	20.12½	19.62½	18.12½	14.25
Electrolytic copper, refinery	19.75	19.25	17.75	14.00
Zinc, St. Louis	6.35	6.35	6.35	5.65
Zinc, New York	6.70	6.70	6.70	6.00
Lead, St. Louis	7.15	7.05	6.62½	5.82½
Lead, New York	7.25	7.10	6.85	6.00
Tin (Straits), New York	48.37½	48.75	49.75	50.12½
Antimony (Asiatic), N. Y.	9.37½	9.12½	9.62½	10.50

# Pittsburgh

## Mills Crowded By Demands for Bars, Sheets and Strips—Automotive Activity Accounts for Much of the Pressure

PITTSBURGH, March 12.—Steel manufacturers are having difficulty in producing and shipping bars, sheets and strips in keeping with the desires of users of those lines. This demand is supplemented by seasonally heavy rollings of rails and somewhat larger requirements of steel for tin plate. The lack of marked activity in pipe, plates, shapes and wire products does not count heavily in the scheduling of steel works operations, which on a mechanical basis are easily 90 per cent of capacity in this and nearby districts, while ingot production is probably above that mark, since the open-hearth furnaces are being driven hard. Several companies in the area are producing to the limit of physical capacity.

The automotive industry still stands out as the largest and most urgent source of steel demand, which is not surprising in view of estimates of current output by the important producers of about 25,000 cars daily, or at a monthly rate of approximately 600,000 cars and trucks. Two makers of low-priced cars, however, account for half of the total, one reported as making 6000 and the other 6800 cars daily. All previous quarterly motor car production records promise to be broken in this quarter.

This district reflects to a degree the activity of the agricultural implement industry. While most of the railroad cars ordered so far this year have gone to Western builders, the local shops have a fair amount of business that is creating demands upon local

mills. Some plate business is drifting to this district that ordinarily would go to Western mills if they were less heavily obligated with the requirements of the Western car builders and the Milwaukee pipe fabricator. Tin plate shipments for the first

two months of the year were at least 5 per cent greater than in the same period last year and there are few producers who did not regard last year as a good one in that product. Steel fabricators could handle much more business than they are getting. Wire nail business suffers from too much generosity on the part of manufacturers in coverages prior to the price advance of late last year. Pipe makers still await the placing of the Monroe-St. Louis gas line, which will require about 140,000 tons.

Makers of cold-finished bars say they are having no trouble in securing second quarter contracts at the higher price announced last month. A fair amount of second quarter sheet business also has been written at the advanced prices. Generally, however, buyers are more concerned about getting deliveries on this quarter's commitments than in their requirements for the next quarter, and the proposed prices for the latter period still are to be seriously tested.

Objection on the part of consumers to the new card of extras on cold-rolled strips is said to be strong, particularly by those using the narrow widths, who will be called upon to pay



from \$4 to \$14 over this quarter's net prices.

The action of two merchant pig iron producers in advancing prices 50c. a ton has been followed by others, but considerable business in foundry iron was closed just prior to the advance, and the record of the week is that much more tonnage was placed at the old than at the new price.

Spot coke has eased off slightly within the week. The scrap market, as it relates to the steel works grades, is being made by dealers, there having been no consumer buying worthy of comment.

**Pig Iron.**—All Pittsburgh-Valley producers of pig iron have advanced prices 50c. a ton on all grades except Bessemer, which at its new price is up only 25c. compared with recent quotations. The new prices are \$18, Valley furnace, for No. 2 foundry, with the usual silicon differentials; \$18 for basic, and \$18.50 for Bessemer and malleable grades. A few sales of foundry iron are reported at the new price, but the great bulk of the business, which included the second quarter requirements of a large sanitary ware manufacturer, were at \$17.50, as the new price did not become effective until that business, which probably amounted to 20,000 tons, was closed. The advance has not been in effect long enough to be thoroughly tested. Producers, however, insist they have no more of this grade for sale at less than \$18, base. It is said that all of the merchant furnaces are committed against probable production well through the second quarter, and, that with second quarter coke to cost 25c. per ton more in the second than in the present quarter, to say nothing of the possibility of higher ore prices, no good reason exists for sales at less than the new price. The new quotations have been made on the other grades, but there is no evidence of sales at the advance yet.

Prices per gross ton, f.o.b. Valley furnace:	
Basic	\$17.50 to \$18.00
Bessemer	18.25 to 18.50
Gray forge	17.00 to 17.50
No. 2 foundry	17.50 to 18.00
No. 3 foundry	17.00 to 17.50
Malleable	18.00 to 18.50
Low phos., copper free	26.50 to 27.00

Freight rate to Pittsburgh or Cleveland district, \$1.76.

#### Warehouse Prices, f.o.b. Pittsburgh

	Base per Lb.
Plates	3.00c.
Structural shapes	3.00c.
Soft steel bars and small shapes	2.90c.
Reinforcing steel bars	2.75c.
Cold-finished and screw stock—	
Rounds and hexagons	3.60c.
Squares and flats	4.10c.
Bands	3.25c.
Hoops	4.25c.
Black sheets (No. 24), 25 or more bundles	3.80c.
Galv. sheets (No. 24), 25 or more bundles	4.55c.
Blue ann'd sheets (No. 10), 1 to 10 sheets	3.45c.
Galv. corrug. sheets (No. 28), per square	\$4.43
Spikes, large	3.40c.
Small	3.80c. to 5.25c.
Boat	3.80c.
Track bolts, all sizes, per 100 count, 60 per cent off list	
Machine bolts, 100 count, 60 per cent off list	
Carriage bolts, 100 count, 60 per cent off list	
Nuts, all styles, 100 count, 60 per cent off list	
Large rivets, base per 100 lb.	\$3.50
Wire, black soft ann'd, base per 100 lb.	\$3.00 to 3.10
Wire, galv. soft, base per 100 lb.	3.00 to 3.10
Common wire nails, per keg	3.00
Cement coated nails, per keg	3.05

**Ferroalloys.**—Producers of the commonly used ferroalloys find great difficulty in keeping abreast of the demands upon them and allocation of output is necessary in ferromanganese that all consumers shall have adequate supplies. There is little or no new business, as consumers are covered by contracts.

**Semi-Finished Steel.**—Billets, slabs and sheet bars do not appear to be available at less than the advanced prices which makers announced a fortnight or so ago, but at the same time no sales of any account are reported at those prices. These forms are scarce, but there is no evidence that strip, tin plate or sheet makers dependent upon outside sources for steel supplies are not getting all the steel they need on contracts. Their requirements are heavy. Specifications for rods also are large. Skelp is very slow and, in contrast with other forms of semi-finished steel, prices are weak.

**Bars, Plates and Shapes.**—Obligations of bar makers do not diminish, and shipments in two to three weeks

is the best promise that any of the mills will make to large tonnage buyers, while to smaller consumers it runs to as much as four weeks on the popular sizes. The higher prices announced several weeks ago have not yet been seriously tested. Structural steel lettings in this area and to shops in this district still run chiefly to small tonnages; several fabricators are near the end of their orders, and even those who are doing fairly well admit the need of an early and substantial increase in new business. The price of 1.95c., base, on structural shapes has not yet come into play. More than 30,000 tons of steel, mostly plates, is embraced in pending river barge orders, and the local plate situation is beginning to benefit somewhat from the sold-up condition of Central Western producers. The Steel Corporation has been obliged to divert to its nearby mills some plate tonnage that could not be fitted into Chicago district mill schedules. But local plate prices are no stronger.

**Rails and Track Supplies.**—Movement of spikes, tie plates and track bolts still awaits the opening of the track laying season. Standard-section rails move well on 1929 contracts, but light-section rails are sluggish.

**Wire Products.**—Jobbers seem to have stocked nails sufficiently before prices advanced to be free from the necessity of specifying very heavily on formal first quarter contracts. The common report is that nails are dull, but that there is a fairly good movement of other wire products. Prices appear steady in most markets.

**Tubular Goods.**—Spang, Chalfant & Co. have taken 150 miles of 8-in. seamless pipe, about 12,000 tons, for a pipe line for the Texas Corporation, while there is 7000 tons of the same size in 87 miles of gathering line for the Humble Oil Co., placed by the Standard Oil Co. of New Jersey. The Mississippi Valley Fuel Corporation line from Monroe, La., to St. Louis, embracing 100,000 tons of 22-in. main line and 40,000 tons of 3 to 16-in. feeder lines, is yet to be closed. Outside of line pipe, mechanical tubing and boiler tubes, business in tubular goods is only moderately good. California is taking a fairly large amount

## THE IRON AGE Composite Prices

### Finished Steel

March 12, 1929, 2.391c. a Lb.

One week ago	2.391c.
One month ago	2.391c.
One year ago	2.364c.
10-year pre-war average	1.689c.

Based on steel bars, beams, tank plates, wire, nails, black pipe and black sheets. These products make 87 per cent of the United States output of finished steel.

	High		Low
1928	2.391c., Dec. 11:	2.314c., Jan. 3	
1927	2.453c., Jan. 4:	2.293c., Oct. 25	
1926	2.453c., Jan. 5:	2.403c., May 18	
1925	2.560c., Jan. 6:	2.396c., Aug. 18	
1924	2.789c., Jan. 15:	2.460c., Oct. 14	
1923	2.824c., Apr. 24:	2.446c., Jan. 2	

### Pig Iron

March 12, 1929, \$18.38 a Gross Ton

One week ago	\$18.38
One month ago	18.38
One year ago	17.75
10-year pre-war average	15.72

Based on average of basic iron at Valley furnace and foundry irons at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

	High		Low
1928	\$18.59, Nov. 27:	\$17.04, July 24	
1927	19.71, Jan. 4:	17.54, Nov. 1	
1926	21.54, Jan. 5:	19.46, July 13	
1925	22.50, Jan. 13:	18.96, July 7	
1924	22.88, Feb. 26:	19.21, Nov. 3	
1923	30.86, Mar. 20:	20.77, Nov. 20	

# Mill Prices of Finished Iron and Steel Products

## Iron and Steel Bars

### Soft Steel

	Base per Lb.
F.o.b. Pittsburgh mill.....	1.90c. to 1.95c.
F.o.b. Chicago.....	2.05c. to 2.15c.
Del'd Philadelphia.....	2.22c. to 2.27c.
Del'd New York.....	2.24c. to 2.29c.
Del'd Cleveland.....	1.95c. to 1.97½c.
F.o.b. Cleveland.....	1.90c. to 2.00c.
F.o.b. Lackawanna.....	2.00c. to 2.10c.
F.o.b. Birmingham.....	2.15c. to 2.20c.
C.i.f. Pacific ports.....	2.35c. to 2.35c.
F.o.b. San Francisco mills.....	2.35c. to 2.40c.

### Billet Steel Reinforcing

F.o.b. Pittsburgh mills, 40, 50, 60-ft.....	2.00c.
F.o.b. Birmingham mills, cut lengths.....	2.25c.
F.o.b. Birmingham, mill lengths.....	2.15c.

### Rail Steel

F.o.b. mills, east of Chicago dist.....	1.85c.
F.o.b. Chicago Heights mill.....	1.95c.

### Iron

Common iron, f.o.b. Chicago.....	2.05c. to 2.10c.
Refined iron, f.o.b. P'gh mills.....	2.75c.
Common iron, del'd Philadelphia.....	2.12c.
Common iron, del'd New York.....	2.14c.

## Tank Plates

	Base per Lb.
F.o.b. Pittsburgh mill.....	1.90c. to 1.95c.
F.o.b. Chicago.....	2.05c. to 2.15c.
F.o.b. Birmingham.....	2.15c. to 2.20c.
Del'd Cleveland.....	2.09c. to 2.14c.
Del'd Philadelphia.....	2.10c. to 2.15c.
F.o.b. Coatesville.....	2.00c. to 2.10c.
F.o.b. Sparrow Point.....	2.00c. to 2.10c.
F.o.b. Lackawanna.....	2.00c. to 2.10c.
Del'd New York.....	2.17½c. to 2.27½c.
C.i.f. Pacific ports.....	2.20c. to 2.30c.

## Structural Shapes

	Base per Lb.
F.o.b. Pittsburgh mill.....	1.90c. to 1.95c.
F.o.b. Chicago.....	2.05c. to 2.15c.
F.o.b. Birmingham.....	2.15c. to 2.20c.
F.o.b. Lackawanna.....	2.00c. to 2.10c.
F.o.b. Bethlehem.....	2.00c. to 2.10c.
Del'd Cleveland.....	2.09c. to 2.14c.
Del'd Philadelphia.....	2.10c. to 2.15c.
Del'd New York.....	2.14½c. to 2.24½c.
C.i.f. Pacific ports.....	2.25c.

## Hot-Rolled Hoops, Bands and Strips

	Base per Lb.
6 in. and narrower, P'gh.....	1.90c. to 2.00c.
Wider than 6 in., P'gh.....	1.80c. to 1.90c.
6 in. and narrower, Chicago.....	2.10c. to 2.20c.
Wider than 6 in., Chicago.....	2.00c. to 2.10c.
Cooperage stock, P'gh.....	2.10c. to 2.20c.
Cooperage stock, Chicago.....	2.20c. to 2.30c.

## Cold-Finished Steel

	Base per Lb.
Bars, f.o.b. Pittsburgh mill.....	2.20c. to 2.30c.
Bars, f.o.b. Chicago.....	2.30c.
Bars, Cleveland.....	2.35c.
Shafting, ground, f.o.b. mill.....	2.65c. to 3.60c.
Strips, P'gh.....	2.85c.
Strips, Cleveland.....	2.75c. to 2.85c.
Strips, del'd Chicago.....	3.15c.
Strips, Worcester.....	3.00c. to 3.10c.
Fender stock, No. 20 gage, Pitts- burgh or Cleveland.....	4.25c. to 4.35c.

\*According to size.

## Wire Products

(Carload lots, f.o.b. Pittsburgh and Cleveland, to jobbers and retailers.)

	Base per Keg
Wire nails.....	\$2.65 to \$2.75
Galvanized nails.....	4.65 to 4.75
Galvanized staples.....	3.35 to 3.45
Polished staples.....	3.10 to 3.20
Cement coated nails.....	2.65 to 2.75

### Base per 100 Lb.

Bright plain wire, No. 6 to No. 9 gage.....	\$2.50 to \$2.60
Annealed fence wire.....	2.65 to 2.75
Spring wire.....	3.50 to 3.60
Galv'd wire, No. 9.....	3.10 to 3.20
Barbed wire, galv'd.....	3.30 to 3.40
Barbed wire, painted.....	3.05 to 3.15
Woven wire fence (per net ton to retailers).....	65.00
Chicago district mill and delivered Chicago prices are \$1 per ton above the foregoing. Bir- mingham mill prices \$3 a ton higher; Worcester Mass., (wire) mill \$3 a ton higher on produc- tion of that plant; Duluth, Minn., mill \$2 a ton higher; Anderson, Ind., \$1 higher.	

## Cut Nails

	Per 100 Lb.
Carloads, Wheeling, Reading or North- umberland, Pa.....	\$2.70
Less carloads, Wheeling or Reading.....	2.80

## Sheets

### Blue Annealed

	Base per Lb.
Nos. 9 and 10, f.o.b. P'gh.....	2.10c. to 2.20c.
Nos. 9 and 10, f.o.b. Chicago dist.....	2.30c.
Nos. 9 and 10, del'd Cleveland.....	2.29c. to 2.39c.
Nos. 9 and 10, del'd Philadelphia.....	2.42c. to 2.52c.
Nos. 9 and 10, f.o.b. Birmingham.....	2.25c. to 2.35c.

### Box Annealed, One Pass Cold Rolled

No. 24, f.o.b. Pittsburgh.....	2.85c. to 2.95c.
No. 24, f.o.b. Chicago dist. mill.....	3.05c.
No. 24, del'd Cleveland.....	3.04c. to 3.14c.
No. 24, del'd Philadelphia.....	3.17c. to 3.27c.
No. 24, f.o.b. Birmingham.....	3.00c. to 3.10c.

### Metal Furniture Sheets

No. 24, f.o.b. P'gh, No. 1 grade.....	4.00c. to 4.10c.
No. 24, f.o.b. P'gh, No. 2 grade.....	3.80c. to 3.90c.

### Galvanized

No. 24, f.o.b. Pittsburgh.....	3.60c. to 3.70c.
No. 24, f.o.b. Chicago dist. mill.....	3.80c.
No. 24, del'd Cleveland.....	3.79c. to 3.89c.
No. 24, del'd Philadelphia.....	3.92c. to 4.02c.
No. 24, f.o.b. Birmingham.....	3.75c. to 3.85c.

### Tin Mill Black Plate

No. 28, f.o.b. Pittsburgh.....	3.00c.
No. 28, f.o.b. Chicago dist. mill.....	3.10c.

### Automobile Body Sheets

No. 20, f.o.b. Pittsburgh.....	4.10c.
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### Long Ternes

No. 24, 8-lb. coating, f.o.b. mill.....	4.00c.
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### Vitreous Enameling Stock

No. 24, f.o.b. Pittsburgh.....	3.90c.
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## Tin Plate

	Per Base Box
Standard cokes, f.o.b. P'gh district mills.....	\$5.35
Standard cokes, f.o.b. Gary.....	5.45

## Terne Plate

(F.o.b. Morgantown or Pittsburgh)

(Per Package, 20 x 28 in.)

8-lb. coating I.C. \$11.20	25-lb. coating I.C. \$16.70
15-lb. coating I.C. 14.00	30-lb. coating I.C. 17.75
20-lb. coating I.C. 15.30	40-lb. coating I.C. 19.85

## Alloy Steel Bars

(F.o.b. maker's mill)

Alloy Quality Bar Base, 2.65c. to 2.75c. per Lb.	Alloy Differential
S.A.E. Series	
2000 (¼% Nickel).....	0.25
2100 (1¼% Nickel).....	0.55
2300 (3¼% Nickel).....	1.50
2500 (5% Nickel).....	2.25
3100 Nickel Chromium.....	0.55
3200 Nickel Chromium.....	1.35
3300 Nickel Chromium.....	3.80
3400 Nickel Chromium.....	3.20
4100 Chromium Molybdenum (0.15 to 0.25 Molybdenum).....	0.50
4100 Chromium Molybdenum (0.25 to 0.40 Molybdenum).....	0.70
4600 Nickel Molybdenum (0.20 to 0.30 Molybdenum, 1.25 to 1.75 Nickel).....	1.05
5100 Chromium Steel (0.60 to 0.90 Chromium).....	0.35
5100 Chromium Steel (0.80 to 1.10 Chromium).....	0.45
5100 Chromium Spring Steel.....	0.20
6100 Chromium Vanadium Bars.....	1.20
6100 Chromium Vanadium Spring Steel.....	0.95
9250 Silicon Manganese Spring Steel (flats).....	0.25
Rounds and squares.....	0.50
Chromium Nickel Vanadium.....	1.50
Carbon Vanadium.....	0.95

Above prices are for hot-rolled steel bars, forging quality. The ordinary differential for cold-drawn bars is ¼c. per lb. higher. For billets 4 x 4 to 10 x 10 in., the price for a gross ton is the net price for bars of the same analysis. For billets under 4 x 4 down to and including 2½ in. squares, the price is \$5 a gross ton above the 4 x 4 billet price.

Slabs with sectional area of 16 in. or over carry the billet price; slabs with sectional area of 12 in. to 16 in. carry a \$5 extra above the billet price and slabs with a sectional area under 12 in. carry the bar price.

Band sizes are 40c. per 100 lb. higher.

## Rails

	Per Gross Ton
Standard, f.o.b. mill.....	\$43.00
Light (from billets), f.o.b. mill.....	36.00
Light (from rail steel), f.o.b. mill.....	34.00
Light (from billets), f.o.b. Ch'go mill.....	36.00

## Track Equipment

	Base per 100 Lb.
Spikes, 9/16 in. and larger.....	\$2.80
Spikes, ½ in. and smaller.....	2.80
Spikes, boat and barge.....	3.00
Tie plates, steel.....	2.15

Angle bars.....	\$2.75
Track bolts, to steam railroads.....	\$3.80 to 4.00
Track bolts, to jobbers, all sizes, per 100 count.....	70 per cent off list

## Welded Pipe

Base Discounts, f.o.b. Pittsburgh District and Lorain, Ohio, Mills

Butt Weld			
Inches	Steel	Black	Galv.
1½	45	19½	1½ and ¾ +11 +36
2	51	25½	1½ ..... 23 5
2½	56	42½	¾ ..... 28 11
3	60	48½	1 and 1¼. 31 15
1 to 3....	62	50½	1½ and 2. 35 18
Lap Weld			
2	55	43½	2 ..... 23 9
2½ to 6..	59	47½	2½ to 3½ 28 13
7 and 8..	56	43½	4 to 6.... 30 17
9 and 10..	54	42½	7 and 8... 29 16
11 and 12.	53	40½	9 to 12... 26 11
Butt Weld, extra strong, plain ends			
1½	41	24½	¾ and ¾ +13 +48
2	47	30½	1½ ..... 23 7
2½	53	42½	¾ ..... 28 12
3	58	47½	1 to 2.... 34 18
1 to 1½..	60	49½	
2 to 3....	61	50½	
Lap Weld, extra strong, plain ends			
2	53	42½	2 ..... 29 13
2½ to 4..	57	46½	2½ to 4.. 34 20
4½ to 6..	56	45½	4½ to 6.. 33 19
7 to 8....	52	39½	7 and 8... 31 17
9 and 10..	45	32½	9 to 12... 21 8
11 and 12.	44	31½	

On carloads the above discounts on steel pipe are increased on black by one point, with supplementary discount of 5%, and on galvanized by 1½ points, with supplementary discount of 5%. On iron pipe, both black and galvanized, the above discounts are increased to jobbers by one point with supplementary discounts of 5 and 2½%.

Note.—Chicago district mills have a base two points less than the above discounts. Chicago delivered base is 2½ points less. Freight is figured from Pittsburgh, Lorain, Ohio, and Chicago district mills, the billing being from the point producing the lowest price to destination.

## Boiler Tubes

Base Discounts, f.o.b. Pittsburgh

Steel	Charcoal Iron
2 in. and 2½ in.. 40	1½ in. .... 1
2½ in.—2½ in.. 48	1¾ in. .... 8
3 in. .... 54	2 in.—2½ in.. 13
3½ in.—3½ in.. 56	2½ in.—2½ in.. 16
4 in. .... 59	3 in. .... 17
4½ in. to 6 in.. 48	3½ in. to 3½ in.. 18
	4 in. .... 20
	4½ in. .... 21

On lots of a carload or more, the above base discounts are subject to a preferential of two fives on steel and of 10 per cent on charcoal iron tubes. Smaller quantities are subject to the following modifications from the base discounts:

Lap Welded Steel—Under 10,000 lb., 6 points under base and one five; 10,000 lb. to carload, 4 points under base and two fives. Charcoal Iron—Under 10,000 lb., 2 points under base; 10,000 lb. to carload, base and one five.

## Standard Commercial Seamless Boiler Tubes

Cold Drawn	
1 in. .... 63	3 in. .... 48
1½ to 1½ in.. 55	3½ to 3½ in.. 50
1¾ in. .... 39	4 in. .... 53
2 to 2½ in.. 34	4½, 5 and 6 in.. 42
2½ to 2½ in.. 42	

## Hot Rolled

2 and 2½ in.. 40	3½ to 3½ in.. 56
2½ and 2½ in.. 48	4 in. .... 59
3 in. .... 54	4½, 5 and 6 in.. 48

Beyond the above base discounts a preferential discount of 5 per cent is allowed on carload lots. On less than carloads to 10,000 lb. base discounts are reduced 4 points with 5 per cent preferential; on less than 10,000 lb., base discounts are reduced 6 points, with no preferential. No extra for lengths up to and including 24 ft. Sizes smaller than 1 in. and lighter than standard gage take mechanical tube list and discounts. Intermediate sizes are gages not listed take price of next larger outside diameter and heavier gage.

## Seamless Mechanical Tubing

	Per Cent Off List
Carbon, 0.10% to 0.30%, base (carloads).....	55
Carbon, 0.30% to 0.40%, base.....	50
Plus differentials for lengths over 18 ft. and for commercial exact lengths. Warehouse discounts on small lots are less than the above.	



of seamless casing, but oil country requirements generally reflect the fresh curtailment of production made necessary by the recent jump in output. The need of orders for line pipe has been so great that price competition has developed on recent inquiries. Some effort is being made to correct an irregular secondary market. It is doubtful that furnace welding pipe capacity is much more than 50 per cent engaged, the general average of pipe mill operations being slightly higher, due to fairly heavy seamless mill operations.

**Sheets.**—There is no letdown in specifications or in mill operations. Heavy demand for plates in the Central West is taking steel away from sheets in some instances and limiting sheet mill operations, but the country's capacity is at least 95 per cent engaged. The American Sheet & Tin Plate Co. last week had the largest order receipts of any week since that of June 2, last year. There is good diversification of business. While the motor car builders still are the leading takers, other consuming industries are doing well, notably the railroad car and car roof builders. While some mills are committed for a month, there is no evidence that buyers who need supplies more promptly are finding trouble in being accommodated. There is comparatively little second quarter business as yet, and first quarter prices still rule on shipments and on business for delivery during the remainder of this month.

**Tin Plate.**—Shipments so far this year have run well ahead of the same period last year. Container manufacturers are very confident as to crop prospects and are taking tin plate freely. Production is between 85 and 90 per cent of capacity, but probably nearer the higher than the lower figure.

**Cold-Finished Steel Bars and Shafting.**—Makers here report no difficulty in obtaining second quarter contracts at 2.30c., base Pittsburgh, but the current market still is more accurately quoted at 2.20c., base. That is the price on first quarter contracts, on which shipments are being made, and it is well established that other demands for shipment this month are not being penalized as to price.

**Bolts, Nuts and Rivets.**—Business in bolts and nuts is said to be better than it has been since 1920. Large rivets are yet to become established at the advance announced several weeks ago. Current business still is being taken at \$2.90, base, per 100 lb.

**Hot-Rolled Strips.**—Obligations of strip makers do not diminish, so insistent are the demands of important consumers. It will be April 15, at least, before present specifications can be completed, and orders likely to be driven in by the limitation of specifications on this quarter's contracts to March 15 probably will mean a continuation of the present high rate of production and shipments throughout next month. Prices are holding well at 1.80c., base, for wide

and at 1.90c. for narrow widths, not much test of higher prices named a few weeks ago having been made.

**Cold-Rolled Strips.**—Consumers of narrow stock do not like the new card of extras, which means such a steep advance in prices. They are not yet ready to contract for second quarter and there is some expectation that they may decide to buy the wide material, on which net prices were reduced, and slit it to the desired widths. There are threats by some of turning to hot-rolled strips and polishing them. The regular market price is 2.85c., base, but for tubing and similar purposes, the market is quotable at 2.75c., base.

**Coal and Coke.**—The shortage of spot furnace coke had eased slightly since a week ago, and, while supplies are not really heavy, they are sufficient to make it difficult to sell at recent prices. Against a range of \$3 to \$3.15 a week ago, the ruling price now is \$3 per net ton at ovens. Spot foundry coke is commonly \$4, but there are variations in the price both ways. Heating coke demands have abated with milder weather. Contracting is active in coal, but as supplies are ample the activity does not produce stronger prices.

**Old Material.**—The market has been very quiet in the past week, but that is merely the result of the fact that important consumers recently covered their needs for about a month. Prices are holding well. Sales of heavy melting steel into consumption at more than \$18.50 would be difficult, and yet a price of \$18.50 on compressed sheets is sustained by sales to a con-

sumer. Starting up of a local steel foundry, which had been idle for fully ten years, has brought a demand for railroad specialties that explains a rather strong market for them. Dealers show less tendency to scramble to cover short sales of the steel works grades than has recently been their practice, and against their sales of 10 days ago they not offering more than \$18; a few lots of fair size have been picked up at \$17.75.

*Prices per gross ton delivered consumers' yards in Pittsburgh and points taking the Pittsburgh district freight rate:*

Basic Open-Hearth Grades:	
No. 1 heavy melting steel.	\$18.00 to \$18.50
No. 2 heavy melting steel.	16.50 to 17.00
Scrap rails	17.75 to 18.25
Compressed sheet steel.	18.00 to 18.50
Bundled sheets, sides and ends	16.50 to 17.00
Cast iron carwheels.	15.25 to 15.75
Sheet bar crops, ordinary.	18.50 to 19.00
Heavy breakable cast.	12.75 to 13.25
No. 2 railroad wrought.	18.25 to 18.75
Hvy. steel axle turnings.	16.50 to 17.00
Machine shop turnings.	10.75 to 11.25

Acid Open-Hearth Grades:	
Railr. knuckles and couplers	21.00 to 21.50
Railr. coil and leaf springs	21.00 to 21.50
Roller steel wheels.	21.00 to 21.50
Low phos. billet and bloom	22.00 to 22.50
ends	22.00 to 22.50
Low phos., mill plates.	20.50 to 21.00
Low phos., light grades.	19.50 to 20.00
Low phos., sheet bar crops	20.50 to 21.00
Heavy steel axle turnings.	16.50 to 17.00

Electric Furnace Grades:	
Low phos. punchings.	20.00 to 20.50
Hvy. steel axle turnings.	16.50 to 17.00

Blast Furnace Grades:	
Short shoveling steel turnings	12.00 to 12.50
Short mixed borings and turnings	12.00 to 12.50
Cast iron borings.	12.00 to 12.50

Rolling Mill Grades:	
Steel car axles.	21.00 to 22.00
No. 1 railroad wrought.	14.50 to 15.00
Sheet bar crops.	20.50 to 21.00

Cupola Grades:	
No. 1 cast.	15.00 to 15.50
Rails 3 ft. and under.	19.50 to 20.00

## February British Steel Output Large

LONDON, ENGLAND, March 12 (*By Cable*).—Pig iron output in February was 519,600 gross tons, with that of steel ingots and castings at 782,900 tons. The former was less than the January output of 563,900 tons, with the steel total larger than the 761,600 tons in January.

February output, compared with that of January and with the monthly average for 1928 and some other years, was as follows in gross tons:

	Pig Iron, Tons	Steel Ingots and Castings, Tons
1913—Av. monthly..	855,000	638,600
1920—Av. monthly..	669,500	755,600
1922—Av. monthly..	408,500	490,100
1923—Av. monthly..	620,000	706,800
1924—Av. monthly..	609,900	685,100
1925—Av. monthly..	519,700	616,400
1926—Av. monthly..	203,500	296,700
1927—Av. monthly..	607,800	758,200
1928—Av. monthly..	550,900	710,400
1929—January .....	563,900	761,600
1929—February .....	519,600	782,900

Monthly average output of pig iron for the first two months of this year has been 541,900 tons, compared with 550,900 tons for 1928, with the steel output at 772,250 tons per month as against 710,400 tons per month in 1928.

## Coal and Coke Production in February

February production of beehive coke is estimated by the United States Bureau of Mines at 430,000 net tons, which is about 10 per cent less than the 479,000 tons in January, but on the daily basis is slightly higher than in January, because of the shorter month. The figures compare with 390,000 tons in February, 1928, when the daily rate was 13 per cent less.

Bituminous coal mined in February is estimated at 47,400,000 net tons, or about 8 per cent less than the 51,456,000 tons of January. The daily rate was greater in February. Both figures compare with 41,351,000 tons in February, 1928, when the daily rate was 15 per cent less than last month.

Algoma Steel Corporation, Sault Ste. Marie, Ont., has just completed the rolling of several thousand tons of rails of special analysis for Canadian National Railways. These have slightly lower carbon than ordinarily specified for heavy-section rails, and the manganese is about 1.5 per cent.

# Semi-Finished Steel, Raw Materials, Bolts and Rivets

## Mill Prices of Semi-Finished Steel

Billets and Blooms		Sheet Bars		Skelp	
Per Gross Ton		(Open Hearth or Bessemer)		(F.o.b. Pittsburgh or Youngstown)	
Rerolling, 4 in. and under 10 in., Pitts-		Pittsburgh	Per Gross Ton	Grooved	Per Lb.
burgh	\$34.00	Youngstown	\$35.00	Universal	1.85c. to 1.90c.
Rerolling, 4 in. and under 10 in., Youngs-		Cleveland	\$35.00	Sheared	1.85c. to 1.90c.
town	34.00				
Rerolling, 4 in. and under 10 in., Cleve-					
land	35.00				
Rerolling, 4 in. and under 10 in., Chicago	35.00				
Forging quality, Pittsburgh	39.00				

## Prices of Raw Material

Ores		Ferromanganese		Fluxes and Refractories	
Lake Superior Ores, Delivered Lower Lake Ports		Per Gross Ton		Fluorspar	
Per Gross Ton		Domestic, 80%, seaboard		Per Net Ton	
Old range Bessemer, 51.50% iron	\$4.55	Foreign, 80%, Atlantic or Gulf port, duty paid		Domestic, 85% and over calcium fluoride, not over 5% silica, gravel, f.o.b. Illinois and Kentucky mines	
Old range non-Bessemer, 51.50% iron	4.40				
Mesabi Bessemer, 51.50% iron	4.40			No. 2 lump, Illinois and Kentucky mines	
Mesabi non-Bessemer, 51.50% iron	4.25			Foreign, 85% calcium fluoride, not over 5% silica, c.i.f. Atlantic port, duty paid	
High phosphorus, 51.50% iron	4.15				
Foreign Ore, c.i.f. Philadelphia or Baltimore				Domestic, No. 1 ground bulk, 95 to 98% calcium fluoride, not over 2 1/4% silica, f.o.b. Illinois and Kentucky mines	
Per Unit					
Iron ore, low phos., copper free, 55 to 58% iron in dry Spanish or Algerian	10.00c.				
Iron ore, low phos., Swedish, average 68% iron	10.00c.				
Iron ore, basic Swedish, average 65% iron	9.00c.				
Manganese ore, washed, 52% manganese, from the Caucasus	33.00c. to 35.00c.				
Manganese ore, Brazilian, African or Indian, basic 50%	33.00c. to 35.00c.				
Tungsten ore, high grade, per unit, in 60% concentrates	\$12.00 to \$12.50				
Per Gross Ton					
Chrome ore, 45 to 50% Cr <sub>2</sub> O <sub>3</sub> , crude, c.i.f. Atlantic seaboard	\$22.00 to \$24.00				
Per Lb.					
Molybdenum ore, 85% concentrates of MoS <sub>3</sub> , delivered	50c. to 55c.				
Coke		Electric Ferrosilicon		Fire Clay Brick	
Per Net Ton		Per Gross Ton Delivered		Per 1000 f.o.b. Works	
Furnace, f.o.b. Connellsville prompt	\$3.00				
Foundry, f.o.b. Connellsville prompt	3.75 to 4.85				
Foundry, by-product, Ch'go ovens	8.00				
Foundry, by-product, New England, del'd	11.00				
Foundry, by-product, Newark or Jersey City, delivered	9.00 to 9.40				
Foundry, Birmingham	5.00				
Foundry, by-product, St. Louis, f.o.b. ovens	8.00				
Foundry by-prod., del'd St. Louis	9.00				
Coal		Bessemer Ferrosilicon		Silica Brick	
Per Net Ton		F.o.b. Jackson County, Ohio Furnace		Per 1000 f.o.b. Works	
Mine run steam coal, f.o.b. W. Pa. mines	\$1.25 to \$1.75				
Mine run coking coal, f.o.b. W. Pa. mines	1.50 to 1.75				
Gas coal, 1/4-in., f.o.b. Pa. mines	1.90 to 2.00				
Mine run gas coal, f.o.b. Pa. mines	1.65 to 1.75				
Steam slack, f.o.b. W. Pa. mines	70c. to 75c.				
Gas slack, f.o.b. W. Pa. mines	1.00 to 1.10				

## Mill Prices of Bolts, Nuts, Rivets and Set Screws

Bolts and Nuts		Bolts and Nuts		Small Rivets	
Per 100 Pieces		Per Cent Off List		(7/8-In. and Smaller)	
(F.o.b. Pittsburgh, Cleveland, Birmingham or Chicago)				Per Cent Off List	
†Machine bolts	70	Semi-finished hexagons nuts	70	F.o.b. Pittsburgh	70 and 10
†Carriage bolts	70	Semi-finished hexagons castellated nuts, S.A.E.	70	F.o.b. Cleveland	70 and 10
Lag bolts	70	Stove bolts in packages, Pittsburgh	80, 10 and 5	F.o.b. Chicago	70 and 10
Plow bolts, Nos. 1, 2, 3 and 7 heads	70	Stove bolts in packages, Chicago	75, 20, 10 and 5		
Hot-pressed nuts, blank or tapped, square	70	Stove bolts in packages, Cleveland	75, 20, 10 and 5		
Hot-pressed nuts, blank or tapped, hexagons	70	Stove bolts in bulk, Pittsburgh	80, 10, 5 and 2 1/2		
C.p.c. and t. square or hex. nuts, blank or tapped	70	Stove bolts in bulk, Chicago	75, 20, 10, 5 and 2 1/2		
Washers*	7.00c. to 6.75c. per lb. off list	Stove bolts in bulk, Cleveland	75, 20, 10, 5 and 2 1/2		
		Tire bolts	60, 5 and 5		
		Discounts of 70 per cent off on bolts and nuts applied on carload business. For less than carload orders discounts of 55 60 per cent apply.			
		Large Rivets		Cap and Set Screws	
		(1/2-In. and Larger)		Per Cent Off List	
		Base per 100 Lb.		(Freight allowed up to but not exceeding 50c. per 100 lb. on lots of 200 lb. or more)	
		F.o.b. Pittsburgh or Cleveland	\$2.90 to \$3.10	Milled cap screws	80, 10 and 5
		F.o.b. Chicago	3.00 to 3.20	Milled standard set screws, case hardened	80 and 5
				Milled headless set screws, cut thread	75 and 10
				Upset hex. head cap screws, U.S.S. thread	85
				Upset hex. cap screws, S.A.E. thread	85
				Upset set screws	80, 10 and 5
				Milled studs	70

\*F.o.b. Chicago, New York and Pittsburgh.  
†Bolts with rolled thread up to and including 1/4 in. x 6 in. take 10 per cent lower list prices.



# Chicago

## Steel Shipments and Orders Continue at Near-Capacity Rate—Mill Backlogs Still Growing

CHICAGO, March 12.—Continued heavy shipments of finished steel products have made no inroads on sellers' books in view of a steady inflow of new business. Most steel consuming industries are well engaged, exceptions being building construction and belated programs in car shops. Mill backlogs are growing, specifications having been the fourth largest of any week so far this year. Although building operations are below normal for the first two and one-half months of this year, there is some promise of betterment. A break in winter weather already has released some tonnage and shipments of structural material are larger. Outlying fabricators are finding it advisable to build up moderate stocks, especially of plates and bars, deliveries on which are so far in the future as to be disconcerting on small jobs on which contractors expect prompt shipment.

Demand for semi-finished steel is unprecedented in this district; buyers, unable to obtain adequate tonnages here, are shopping in other markets. Reports of larger output and heavier demand for steel in other producing centers appear to have put at rest fears entertained here that outside competition would become severe.

Implement manufacturers are placing supplementary tonnages. Heavy specifications for hot-rolled strips and alloy steel bars are causing not a little concern in the matter of arranging rolling schedules and in meeting the urgent needs of buyers.

Production of standard-section rails is now close to capacity, having been at about 85 per cent for several weeks.

**Pig Iron.**—Reports of pending advances in prices for Northern foundry iron appear to be based on the possibility of increased prices for ore. In the meantime, local producers are holding firmly to \$20 a ton, f.o.b. local furnaces. Forward buying is progressing, but at a slower pace than in recent weeks. A Chicago buyer has purchased 1700 tons, and 800 tons has been ordered for delivery to Joliet, Ill. Shipments are slightly in excess of production. Furnace stocks are a trifle lower but are better balanced than at the beginning of the month. Charcoal iron is moving in fair tonnages against old orders. The silvery market is quiet, with prices well maintained on carload sales. A moderate volume of Southern iron is moving into this territory.

### Prices per gross ton at Chicago:

N'th'n No. 2 fdy., sil.	1.75 to 2.25..	\$20.00
N'th'n No. 1 fdy., sil.	2.25 to 2.75..	20.50
Malleable, not over 2.25 sil.	.....	20.00
High phosphorus .....	.....	20.00
Lake Super, charcoal, sil.	1.50.....	27.04
So'th'n No. 2 fdy. (all rail)...	\$22.51 to 23.01	
Low phos., sil. 1 to 2, copper free..	.....	29.50
Silvery, sil. 8 per cent.....	.....	30.79
Bess. ferrosilicon, 14-15 per cent...	.....	46.29

Prices are delivered consumers' yards except on Northern foundry, high phosphorus and malleable, which are f.o.b. local furnace, not including an average switching charge of 61c. per gross ton.

**Ferroalloys.**—Heavy shipments continue. New sales are light.

Prices delivered Chicago: 80 per cent ferromanganese, \$112.56; 50 per cent ferrosilicon, \$83.50 to \$88.50; spiegel-eisen, 19 to 21 per cent, \$40.76.

**Cast Iron Pipe.**—Inquiry for cast iron pipe, except in small lots, is measurably lighter than a week ago.

This is looked upon by sellers as a normal fluctuation in the market and as having no bearing on business that will come before the trade before the end of this month. Bloomington, Ill., has closed for 5300 tons of pipe for a water treating plant and a sewage disposal works. Although sellers offering French pipe made the lowest bid by about \$6 a ton, the contract was placed with the United States Cast Iron Pipe & Foundry Co. It is reported here that Dearborn, Mich., has ordered 800 tons through a contractor and that Jackson, Mich., has placed an order for 220 tons. Noteworthy among new inquiries are 2600 tons of 6 to 16-in. pipe by Pontiac, Mich., and a large tonnage, including 49,000 ft. of 6-in. and 20,000 ft. of 8-in. pipe, by Roseville, Mich. The Chesapeake & Ohio has ordered a round tonnage through contractors. Western railroads show little interest. Shipments are growing larger as the pipe laying season draws nearer in the Northern States. Prices are firm at \$37 to \$38 a ton, Birmingham, for 6-in. and larger diameters.

Prices per net ton, deliv'd Chicago: Water pipe, 6-in. and over, \$45.20 to \$46.20; 4-in., \$49.20 to \$50.20; Class A and gas pipe, \$3 extra.

**Rails and Track Supplies.**—Chicago rail mills are engaged at close to capacity on schedules that are well arranged for several months. Output has not risen as rapidly this year as has been usual in the past, because many railroads were willing to take some tonnage in the fall and winter months against orders placed late last year. Current contracts, which compare favorably with those of the year before, are therefore being spread over a longer period as to deliveries. Miscellaneous track supply purchases total 5000 tons. Inquiry is moderately active for small lots. The light rail market is dull.

Prices f.o.b. mill, per gross ton: Standard section open-hearth and Bess. rails, \$43; light rails, rolled from billets, \$36. Per lb.: Standard railroad spikes, 2.80c.; track bolts with square nuts, 3.80c.; steel tie plates, 2.15c.; angle bars, 2.75c.

**Sheets.**—Prices remain steady in a market which is active both in forward buying and in specifications. Users now appear better able to judge second quarter needs and are less hesitant in making commitments. Specifications are measurably heavier

and mills have order books that are the best in many months. One group of hot mills is operating only five days this week, in spite of a demand that normally would dictate capacity output. This is a reflection of the shortage of semi-finished steel. Next week this group of hot mills will operate full at the expense of some other finishing department. Roofing manufacturers who have been unusually late this spring in taking steel are now entering liberal specifications. There are indications that current specifications are almost wholly for immediate consumption. Deliveries are tighter and now range from three to four weeks for most grades.

Base prices per lb., deliv'd from mill in Chicago: No. 24 black sheets, 3.10c.; No. 24 galv., 3.85c.; No. 10 blue ann'd, 2.35c. Deliv'd prices at other Western points are equal to the freight from Gary, plus the mill prices, which are 5c. per 100 lb. lower than Chicago delivered prices.

**Plates.**—Activity in the Chicago plate market is confined largely to specifying against old contracts and recent orders. Releases of steel by railroad car builders are measurably large as shops swing into heavier production. It is believed here that a part of the cars to be purchased by the New York Central will be built in Western shops. Fresh railroad equipment inquiry is scattered and of small size when compared with recent business of this kind. The Rock Island will buy 500 underframes. Noteworthy among new orders are those for 34 passenger train cars for the Illinois Central. A Western oil producer has ordered 4000 tons of tank plates. Inquiry stands at 15,000 tons, 12,000 of which is carried over from the previous week. Several petroleum interests are preparing expansion programs which may reach fabricators early in the spring. Plate deliveries range from six to eight weeks.

Mill prices on plates, per lb.: 2.05c. to 2.15c. base, Chicago.

**Structural Material.**—Specifications for structural material are heavier, following a liberal number of awards. The Inland Steel Co. has closed for a mill building that will take 3000 tons and a like tonnage is still to be placed. The Milwaukee County Board will meet this week for the purpose of acting upon the award of 12,000 tons of steel for the County Court House to the McClintic-Marshall Co.

Mill prices on plain material, per lb.: 2.05c. to 2.15c. base, Chicago.

**Bars.**—Pressure for mild steel bars is increasing. Local mills are operating at capacity and deliveries are being extended. Sales and specifications are larger than shipments. Specifications for iron bars are in fair volume. Second quarter books have been opened to railroads at 2.05c. per lb., Chicago. Deliveries of alloy steel bars are falling behind, and sellers are experiencing considerable trouble in meeting the demands of consumers. Second quarter contracts are well covered. There is a liberal amount of spot buying. Activity in the rail steel bar market is more pronounced. Barn

equipment makers are speeding production and are taking increased quantities of steel. Bed manufacturers appear to have struck a stride which is about normal for this time of the year. All rail steel bar mills in this district are operating double turn. Prices remain firm at 1.95c. per lb., Chicago Heights.

**Reinforcing Bars.**—Activity in this market lies more in fresh inquiry and revival of old projects than in tonnage added to shop books. The pending list bulks large and appears to be taking on life. At least, sellers are more optimistic and are looking forward to a substantial volume of business late in March and in April. Specifications against old contracts are more liberal and shipments now represent about 60 per cent of shop capacity. Orders have been placed for 4,000,000 sq. ft. of concrete reinforcing mesh and 1200 tons of pans for the Mercantile Mart. Prices remain moderately strong. The desire for orders is not without effect on quotations for billet steel reinforcing bars, which have dipped \$2 a ton on several recent attractive contracts.

**Bolts, Nuts and Rivets.**—Second quarter contracting is well under way. Prices are unchanged. Car builders are entering more liberal specifications and most of the railroads are taking heavier shipments.

**Coke.**—Shipments of by-product foundry coke are maintaining the record pace set in February. Judged by the movement of this commodity, there is no lessening in the pig iron melt in this district. Prices are firm at \$8 a ton, f.o.b. local ovens.

**Old Material.**—Radical changes are absent in the Chicago scrap market. Brokers have sizable orders on their books and their chief concern is in covering. This is not particularly difficult to do in the heavy tonnage grades, but shipments of specialties by producers continue to drag, and for this reason prices for these grades are comparatively strong. Quotations are steady on most grades. Dealers readily pay \$15.75 to \$16 a gross ton, delivered, for heavy melting steel to

be applied against old orders. Users of cast iron borings appear well satisfied with the size of tonnages due them and show little interest in new offerings. Dealers can freely buy this grade from producers at \$11 to \$11.25 a gross ton, delivered. The indifference of consumers and the fact that local production is large tend to weaken prices for cast iron borings. Trading in cast iron car wheels is dull, notwithstanding that the railroad equipment market is active. Among railroad offerings are 50,000 tons by the Pennsylvania, 4000 tons by the Rock Island and 3000 tons by the Wabash.

Prices deliv'd Chicago district consumers:  
Per Gross Ton

Basic Open-Hearth Grades:	
Heavy melting steel.....	\$15.50 to \$16.00
Shoveling steel .....	15.50 to 16.00
Frogs, switches and guards, cut apart, and misc. rails	16.75 to 17.25
Hydrcul. compressed sheets	14.00 to 14.50
Drop forge flashings.....	12.00 to 13.00
Forg'd cast and r'd steel carwheels .....	19.00 to 19.50
Railr'd tires, charg. box size .....	19.00 to 19.50
Railr'd leaf spring cut apart .....	19.00 to 19.50
Acid Open-Hearth Grades:	
Steel couplers and knuckles	17.00 to 17.50
Coil springs .....	19.50 to 20.00
Electric Furnace Grades:	
Axle turnings .....	15.75 to 16.25
Low phos. punchings.....	17.25 to 17.75
Low phos. plate, 12 in. and under .....	17.25 to 17.75
Blast Furnace Grades:	
Axle turnings .....	11.25 to 11.75
Cast iron borings.....	10.75 to 11.25
Short shoveling turnings..	10.50 to 11.00
Machine shop turnings....	7.50 to 8.00
Rolling Mill Grades:	
Iron rails .....	16.00 to 16.50
Rerolling rails .....	17.50 to 18.00
Cupola Grades:	
Steel rails less than 3 ft..	19.00 to 19.50
Steel rails less than 2 ft..	19.50 to 20.00
Angle bars, steel.....	17.50 to 18.00
Cast iron carwheels.....	14.50 to 15.00
Malleable Grades:	
Railroad .....	19.50 to 20.00
Agricultural .....	16.50 to 17.00
Miscellaneous:	
*Relaying rails, 56 to 60 lb. heav. ....	23.00 to 25.00
*Relaying rails, 65 lb. and heav. ....	26.00 to 31.00

Per Net Ton	
Rolling Mill Grades:	
Iron angles and splice bars	15.00 to 15.50
Iron arch bars and transoms .....	21.25 to 21.75
Iron car axles.....	27.50 to 28.00
Steel car axles.....	17.50 to 18.00
No. 1 railroad wrought....	14.00 to 14.50
No. 2 railroad wrought....	13.75 to 14.25
No. 1 bushelling.....	12.00 to 12.50
No. 2 bushelling.....	7.00 to 7.50
Locomotive tires, smooth..	14.50 to 15.00
Pipes and flues.....	9.50 to 10.00
Cupola Grades:	
No. 1 machinery cast.....	16.00 to 16.50
No. 1 railroad cast.....	15.50 to 16.00
No. 1 agricultural cast....	14.50 to 15.00
Stove plate .....	12.75 to 13.25
Grate bars .....	13.50 to 14.00
Brake shoes .....	12.50 to 13.00

\*Relaying rails, including angle bars to match, are quoted f.o.b. dealers' yards.

**Wire Products.**—Forward buying in wire and wire products is gaining momentum and specifications in the last week are the heaviest so far this year. Specifications entered at mills by jobbers, though somewhat improved, are not up to sellers' expectations. Low temperatures in the Northwest are hampering sales, while rains and floods in the South and some of the Central States are interfering with distribution. Output

is a shade above 65 per cent of capacity and mill stocks are growing at a slow pace. There is an active demand for concrete reinforcing fabric, orders during the week having aggregated more than 2000 tons. Shipments of woven wire fencing show some improvement, but the demand for nails remains very light. New purchases and specifications by the manufacturing trade are heavy. Shipments to automobile manufacturers will be lighter in the coming week. While some look on this as a normal fluctuation in demand, there are others who sense a condition wherein this industry has overproduced, not from the viewpoint of potential demand, but because unseasonable weather has deferred purchasers from taking new cars from salesrooms.

## Gain in Steel Corporation's Orders in February

Another increase in the unfilled orders on the books of the United States Steel Corporation was registered in February. The gain was 34,854 tons. On Feb. 28 the total unfilled business was 4,144,341 tons, compared with 4,109,487 tons on Jan. 31. A year ago the unfilled tonnage was 4,398,189 tons. The February increase compares with one in January of 132,775 tons and with 303,712 tons in December. There was a decrease in November of 78,030 tons. The table gives the reported figures for the last 14 months.

		1929	1928
Jan.	31.....	4,109,487	4,275,947
Feb.	28.....	4,144,341	4,398,189
March	31.....	.....	4,335,206
April	30.....	.....	3,872,133
May	31.....	.....	3,416,822
June	30.....	.....	3,637,009
July	31.....	.....	3,570,927
Aug.	31.....	.....	3,624,043
Sept.	30.....	.....	3,698,368
Oct.	31.....	.....	3,751,030
Nov.	30.....	.....	3,673,000
Dec.	31.....	.....	3,976,712

## Record March Output of Automobiles Expected

Automotive Industries this week will say:

"Automobile factories have swung into greater volume production this month with the prospect of turning out more cars and trucks than ever have been rolled off the assembly lines in any March. Their anticipation of a record showing seems only logical in the light of the January and February turnouts, which exceeded those of the corresponding months in any previous year. Increases in the production rate at a number of the plants range from 5 to 15 per cent and it appears certain that maximum capacity will be reached in several instances."

The annual meeting of the American Refractories Institute, Dorothy A. Texter, 2202 Oliver Building, Pittsburgh, secretary, will be held at French Lick Springs, Ind., May 21 and 22.

## Warehouse Prices, f.o.b. Chicago

Base per Lb.	
Plates and structural shapes.....	3.10c.
Soft steel bars.....	3.00c.
Reinforc'g bars, billet steel.....	2.35c.
Reinforc'g bars, rail steel.....	2.05c.
Cold-fin. steel bars and shafting—	
Rounds and hexagons.....	3.60c.
Flats and squares.....	4.10c.
Bands (3/8 in. in Nos. 10 and 12 gages) .....	3.20c.
Hoops (No. 14 gage and lighter)..	3.75c.
Black sheets (No. 24).....	3.80c.
Galv. sheets (No. 24).....	4.65c.
Blue ann'd sheets (No. 10).....	3.35c.
Spikes, stand. railroad.....	3.55c.
Track bolts .....	4.55c.
Rivets, structural .....	3.80c.
Rivets, boiler .....	3.80c.
Per Cent Off List	
Machine bolts .....	60
Carriage bolts .....	60
Coach or lag screws.....	60
Hot-pressed nuts, sq., tap. or blank..	60
Hot-pressed nuts, hex., tap. or blank..	60
No. 8 black ann'd wire, per 100 lb..	\$3.30
Com. wire nails, base per keg.....	3.20
Cement c'd nails, base per keg.....	3.20



# Philadelphia

## Steel Contracting Slow to Develop—Scrap Prices Show More Stability

PHILADELPHIA, March 12.—Steel consumers show no haste in entering into second quarter commitments. Operating rates of eastern Pennsylvania mills continue at 80 to 85 per cent of capacity. Sheet mills are well booked with tonnage for the rest of this quarter, but have not yet entered into many contracts for the next quarter. Shape prices are still irregular, showing no tendency to advance to the new price level of bars and plates.

**Pig Iron.**—Buying for second quarter has not yet been extensive, but there are a number of inquiries for 200 to 300 tons each and one for 500 tons. The Hubley Mfg. Co., Lancaster, Pa., has closed on about 750 tons of foundry iron, reported to have been placed with an eastern Pennsylvania furnace. Low phosphorus iron is quiet, but firm. Recent strength in British pig iron quotations has brought the delivered price of British low phosphorus to American consumers about \$1 a ton above the domestic market in eastern Pennsylvania. Basic iron is quiet, consumers in this district having covered for their nearby requirements. With four basic open-hearth furnaces projected for the General Steel Castings Co. plant at Ed-dystone, Pa., the new company is expected to be a sizable consumer of basic iron.

### Prices per gross ton at Philadelphia:

East. Pa. No. 2, 1.75 to 2.25 sil.	\$21.26 to \$21.76
East. Pa. No. 2X, 2.25 to 2.75 sil.	21.76 to 22.26
East. Pa. No. 1X, 2.25 to 2.76 Basic (del'd east. Pa.)	20.25 to 20.50
Gray forge	20.50 to 21.00
Malleable	21.25 to 21.75
Stand. low phos. (f.o.b. N. Y. State furnace)	22.00 to 23.00
Cop. b'rg low phos. (f.o.b. furnace)	23.50 to 24.00
Va. No. 2 plain, 1.75 to 2.25 sil.	25.29
Va. No. 2X, 2.25 to 2.75 sil.	25.79

Prices, except as specified otherwise, are deliv'd Philadelphia. Freight rates: 76c. to \$1.64 from eastern Pennsylvania furnaces; \$4.54 from Virginia furnaces.

**Bars.**—Contracting for the second quarter has not yet developed, but mills are firm in quoting 1.95c., Pittsburgh, or 2.27c., Philadelphia, except in the case of certain eastern Pennsylvania shape mills, which roll a limited range of bar sizes. These sellers have lately been offering steel bars on an f.o.b. mill basis, using the same base price as they usually quote on structural shapes, about 2c. per lb., mill, with the usual bar extras.

**Shapes.**—Irregular prices continue, 1.95c., f.o.b. nearest mill to consumer, easily obtainable by buyers of desirable tonnages and 2c. to 2.05c., mill, or on a basis of Pencoyd, Pa., 2.06c. to 2.11c., delivered Philadelphia, quoted on the smaller tonnages. The usual spring activity in fabricated steel projects has not yet developed to any extent and fabricators are competing keenly for the limited tonnage in the market at present. The Board of Transit, Philadelphia, will open bids April 2 on the contract for a subway under the City Hall, requiring about 2000 tons of structural material.

**Plates.**—Mills are well engaged and

operating at 80 to 85 per cent of capacity. Local shipyards have provided some good tonnages of plates recently and still have in prospect shipbuilding contracts not yet awarded, which include two ships for the Matson Line, three 650-ft. passenger and freight ships for the Robert Dollar line and four ships for the Export Steamship Corporation. Plate prices are being maintained at 2.05c. per lb., Coatesville, or 2.15c., delivered Philadelphia, and a test of this price for second quarter is expected soon, with consumers beginning to show some interest in contracts for the next quarter.

**Warehouse Business.**—Buying from stock is increasing and prices are being maintained with little shading. Demand for galvanized sheets has been especially active recently.

**Sheets.**—Some contracts for blue annealed sheets for second quarter delivery at 2.10c. and 2.20c., base Pittsburgh, have been closed, but in most cases consumers show no haste in covering their requirements. Meanwhile, mills are asking the \$2 per ton advance recently announced. Black sheets are quoted at 2.95c. per lb., Pittsburgh, or 3.27c., delivered Philadelphia, and galvanized at 3.70c., Pittsburgh, or 4.02c., Philadelphia. Mills express confidence that the present blue annealed sheet quotation will be maintained on second quarter contracts and contracting expected before the end of this month will provide a test of the new prices on black and galvanized. Automobile body builders and radio manufacturers in this district are operating at high

### Warehouse Prices, f.o.b. Philadelphia

	Base per lb.
Plates, 1/4-in. and heavier	2.70c.
Plates, 5/16-in.	2.90c.
Structural shapes	2.70c.
Soft steel bars, small shapes, iron bars (except bands)	2.80c.
Round-edge iron	3.50c.
Round-edge steel, iron finish-d 1 1/2 x 1 1/2 in.	3.50c.
Round-edge steel, planished	4.30c.
Reinforc. steel bars, sq. twisted and deform.	2.60c. to 2.80c.
Cold-fin. steel, rounds and hex.	3.60c.
Cold-fin. steel, sq. and flats	4.10c.
Steel hoops	3.40c.
Steel bands, No. 12 to 5/8-in., inclus.	3.15c.
Spring steel	5.00c.
*Black sheets (No. 24)	4.10c.
*Galvanized sheets (No. 24)	4.85c.
Blue ann'd sheets (No. 10)	3.25c.
Diam. pat. floor plates—	
1/4-in.	5.30c.
5/16-in.	5.50c.
Rails	3.20c.
Swedish iron bars	6.60c.

\*For 50 bundles or more; 10 to 49 bun., 4.10c. base; 1 to 9 bun., 4.35c. base.  
†For 50 bundles or more; 10 to 49 bun., 4.95c. base; 1 to 9 bun., 5.30c. base.

rates and are expected to use some substantial tonnages of automobile sheets and deep drawing material.

**Imports.**—Ore arrivals at this port in the week ended March 9 totaled 6627 gross tons, of which 5607 tons was manganese ore from the Gold Coast in Africa, 1000 tons chrome ore from Greece and 20 tons iron ore from Spain. Pig iron imports totaled 216 gross tons; 156 tons from Norway and 60 tons from Sweden. Steel arrivals consisted of 72 tons of steel bars, 12 tons of charcoal iron bars and 59 tons of steel billets from Sweden, 10 tons of galvanized strip steel from the United Kingdom.

**Old Material.**—All grades of scrap seem to have become stabilized, and the past week brought little change in prices. No. 1 heavy melting steel has again brought \$16.50 per ton, delivered, with the purchase by a Claymont, Del., mill of about 2000 tons. No. 1 cast shows a tendency to weakness, but recent sales of the grade at \$16 per ton and less are reported to have been of material not to be classified as strictly No. 1 cast. No. 2 heavy melting steel is firm at \$13 per ton, delivered, and a broker with a contract at \$13 per ton, delivered Phoenixville, Pa., is reported to have paid up to \$13.25 per ton, delivered.

### Prices per gross ton delivered consumers' yards, Philadelphia district:

No. 1 heavy melting steel	\$16.00 to \$16.50
Scrap T rails	15.50 to 16.00
No. 2 heavy melting steel	12.25 to 13.00
No. 1 railroad wrought	16.00 to 16.50
Bundled sheets (for steel works)	11.00 to 11.50
Hydraulic compressed, new	14.50 to 15.50
Hydraulic compressed, old	13.00 to 13.50
Machine shop turnings (for steel works)	11.50
Heavy axle turnings (or equiv.)	14.00 to 14.50
Cast borings (for steel works and roll. mill)	11.00 to 11.50
Heavy breakable cast (for steel works)	15.50 to 16.00
Railroad grate bars	12.50 to 13.00
Stove plate (for steel works)	12.75 to 13.00
No. 1 low phos., hvy., 0.04% and under	20.00 to 21.00
Couplers and knuckles	19.00 to 19.50
Roller steel wheels	18.50
No. 1 blast f'nace scrap	10.00 to 10.50
Wrot. iron and soft steel pipes and tubes (new specific)	15.50
Shafting	19.00 to 20.00
Steel axles	22.00 to 23.00
No. 1 forge fire	13.00 to 14.00
Cast iron carwheels	16.50
No. 1 cast	16.50
Cast borings (for chem. plant)	15.00
Steel rails for rolling	17.00 to 17.50

## Philadelphia Body Plant Expands Activities

For the first time since the record-breaking year of 1926, the productive payroll of the Budd Mfg. Co. at its Philadelphia plant crossed the quarter million mark for the week ended March 2. This figure is almost double that of three months ago.

The Union Trust Co., Pittsburgh, has been appointed temporary receiver for the James McNeil & Brothers Co., steel plate fabricator, Twenty-eighth Street and Allegheny Valley Railroad, Pittsburgh.

# New York

## Pig Iron Firmer, Though Week's Sales Were at Recent Prices—49,000 Tons of Steel in Subways

NEW YORK, March 12.—The pig iron market has a stronger tone, although there has been little change as yet in prices actually paid by consumers. Many of the leading melters have covered for their second quarter needs, and furnaces have built up sizable backlogs. One producer has withdrawn from the market, and another, which has been an aggressive seller, is now fortified with a good volume of business, including a substantial tonnage entered quietly. Current quotations tend to be stronger, although late sales have been at recent levels. In a few cases, in fact, silicon differentials were waived, No. 2X, for example, having been sold at \$17, Buffalo. Sales for barge shipment from Buffalo have been hindered by the uncertainty of water rates. However, a meeting to be held this week between furnace interests and barge lines is likely to result in an early announcement of rates, as well as possible arrangements for pooling pig iron shipments. Pig iron sales in this district during the week totaled about 14,000 tons. New inquiries are confined mainly to small tonnages. The Thatcher Co. has bought 1500 tons for Garwood, N. J., and 500 tons for Newark, dividing the business among Buffalo, eastern Pennsylvania and New England furnaces. A Connecticut melter is in the market for 600 to 1000 tons for barge delivery. The Consolidated Machine Tool Corporation, Rochester, N. Y., is inquiring for 600 tons for its Hilles & Jones plant, Wilmington, Del.

Prices per gross ton, delivered New York district:

Buffalo No. 2 fdy., sil. 1.75 to 2.25	\$21.91 to \$22.41
*Buf. No. 2, del'd east.	
N. J.	20.28 to 20.78
East. Pa. No. 2 fdy., sil. 1.75 to 2.25	20.89 to 22.02
East. Pa. No. 2X fdy., sil. 2.25 to 2.75	21.39 to 22.52
East. Pa. No. 1X fdy., sil. 2.75 to 3.25	21.89 to 23.02

Freight rates: \$4.91 from Buffalo, \$1.39 to \$2.52 from eastern Pennsylvania.

\*Price delivered to New Jersey cities having rate of \$3.28 a ton from Buffalo.

**Plates, Shapes and Bars.**—Some of the steel bar mills have at least three or four weeks orders on their books, and with the additional tonnage which will be specified by March 15, the final date for first quarter contract specifications, it is expected that bar mill engagement will extend pretty generally through April and perhaps into May. Some of the mills have permitted customers to overspecify on their contracts for this quarter to an extent that will provide for a part of their second quarter requirements at 1.90c., this quarter's price. A few mills, however, are insisting on 1.95c. for all business not specifically covered by first quarter contracts. Second quarter contracts have been writ-

ten at 1.95c., but the amount of contracting has been reduced because of the additional coverage permitted to buyers and because some mills are now so heavily engaged for the next quarter that they are not exerting the usual pressure for such commitments. The volume of business in plates and shapes is fairly satisfactory, but mills are not hard pressed in getting out all of the tonnage desired, and consumers are finding no difficulty in supplying their needs. Structural mills have good backlogs, but plate mills are less crowded. In structural material for specific projects, a good deal of tonnage taken at the first quarter price will run over into second quarter, but plate buyers are generally content to fill their nearby requirements only. For shipment or specification this month, plates and shapes are obtainable at 2c., Coatesville, for the former and at 2c., Bethlehem, for the latter. Four subway sections, two in Brooklyn and two in Manhattan, for which general contracts have been awarded, will take a total of 49,000 tons of fabricated steel, which, it is expected, will be placed within a few days. Bids will be opened Friday on another section requiring 8000 tons.

Mill prices per lb., deliv'd New York: Soft steel bars, 2.24c. to 2.29c.; plates, 2.17½c. to 2.22½c.; struc. shapes, 2.14½c. to 2.19½c.; bar iron, 2.14c.

**Cast Iron Pipe.**—Buying of pressure pipe is limited to small tonnages for private buyers and small municipalities. Prices are unchanged, but not particularly firm when a sizable tonnage is offered. The Brooklyn Union Gas Co., Brooklyn, has placed about 2000 tons of 6 and 8-in. pipe with the Donaldson Iron Co., Emaus, Pa. About 400 tons of 6 to 12-in. Class C water pipe for Bloomfield, N. J., was awarded to the United States Cast Iron Pipe & Foundry Co., although the low bid was submitted by the Herbert Kennedy Co., representing the French interest. Bids will be opened March 15 by the Department of Electricity, Brooklyn, on about 400 tons of 6 to 36-in. pipe and fittings. Camp Devens, Mass., opens bids March 18 on about 200 tons of cast iron pipe and fittings.

Prices per net ton deliv'd New York: Water pipe, 6-in. and larger, \$38.60 to \$40.60; 4-in. and 5-in., \$43.60 to \$45.60; 3-in., \$53.60 to \$55.60. Class A and gas pipe, \$3 extra.

**Sheets.**—Although the mills represented in this territory are generally quoting 3.70c., 2.95c. and 2.20c., Pittsburgh, on galvanized black and blue annealed sheets respectively, there are few sales at these prices and consumers do not yet seem disposed to test them on second quarter contract business. The mills, on the other hand, with rolling schedules filled to capacity for several weeks, are not

pressing for contracts. As a result, there is little activity in the market. This week is expected to bring in heavy specifications from consumers who must specify their first quarter tonnage by March 15, and in some cases the stocks obtained will be sufficient for their requirements for six or eight weeks.

**Reinforcing Bars.**—The Concrete Steel Co. has booked 400 tons for foundations of an office building for

### Warehouse Prices, f.o.b. New York

	Base per Lb.	
Plates and structural shapes.....	3.30c.	
Soft steel bars, small shapes.....	3.25c.	
Iron bars.....	3.24c.	
Iron bars, Swed. charcoal.....	7.00c. to 7.25c.	
Cold-fin. shafting and screw stock—		
Rounds and hexagons.....	3.60c.	
Flats and squares.....	4.10c.	
Cold-roll strip, soft and quarter		
hard.....	5.15c. to 5.40c.	
Hoops.....	4.25c.	
Bands.....	3.75c.	
Blue ann'l'd sheets (No. 10).....	3.85c. to 3.90c.	
Long terne sheets (No. 24).....	5.80c.	
Standard tool steel.....	12.00c.	
Wire, black annealed.....	4.50c.	
Wire, galv. annealed.....	5.15c.	
Tire steel, 1½ x ½ in. and larger.....	3.30c.	
Smooth finish, 1 to 2½ x ¼ in.		
and larger.....	3.65c.	
Open-hearth spring steel, bases.....	4.50c. to 7.00c.	
Machine bolts, cut thread:	Per Cent	Off List
¾ x 6 in. and smaller.....	.60	
1 x 30 in. and smaller.....	.50 to 50 and 10	
Carriage bolts, cut thread:		
½ x 6 in. and smaller.....	.60	
¾ x 20 in. and smaller.....	.50 to 50 and 10	
Cowch screws:		
½ x 6 in. and smaller.....	.60	
1 x 16 in. and smaller.....	.50 to 50 and 10	
Boiler Tubes —	Per 100 Ft.	
Lap welded, 2-in.....	\$17.33	
Seamless steel, 2-in.....	20.24	
Charcoal iron, 2-in.....	25.00	
Charcoal iron, 4-in.....	67.00	
Discounts on Welded Pipe		
Standard Steel—	Black	Galv.
½-in. butt.....	46	29
¾-in. butt.....	51	37
1-3-in. butt.....	53	39
2½-6-in. lap.....	48	35
7 and 8-in. lap.....	44	17
11 and 12-in. lap.....	37	12
Wrought Iron—		
½-in. butt.....	5	+19
¾-in. butt.....	11	+ 9
1-1½-in. butt.....	14	+ 6
2-in. lap.....	5	+14
3-6-in. lap.....	11	+ 6
7-12-in. lap.....	3	+16
Tin Plate (14 x 20 in.)		
	Prime	Seconds
Coke, 100 lb. base box....	\$6.45	\$6.20
Charcoal, per Box	A	AAA
IC.....	\$9.70	\$12.10
IX.....	12.00	14.25
IXX.....	13.90	16.00
Terne Plate (14 x 20 in.)		
IC—20-lb. coating.....	\$10.00 to \$11.00	
IC—30-lb. coating.....	12.00 to 13.00	
IC—40-lb. coating.....	13.75 to 14.25	
Sheets, Box Annealed—Black, C. R.		
One Pass		
	Per Lb.	
Nos. 18 to 20.....	3.80c.	
No. 22.....	3.95c.	
No. 24.....	4.00c.	
No. 26.....	4.10c.	
No. 28*.....	4.25c.	
No. 30.....	4.50c.	
Sheets, Galvanized		
	Per Lb.	
No. 14.....	4.40c.	
No. 16.....	4.25c.	
No. 18.....	4.40c.	
No. 20.....	4.50c.	
No. 22.....	4.60c.	
No. 24.....	4.75c.	
No. 26.....	5.00c.	
No. 28*.....	5.25c.	
No. 30.....	5.65c.	
*No. 28 and lighter, 36 in. wide, 20c.		
higher per 100 lb.		

\*No. 28 and lighter, 36 in. wide, 20c. higher per 100 lb.



the Irving Trust Co. at 1 Wall Street. The volume of tonnage placed for small jobs has shown considerable improvement during the last two weeks, and pending business is being rapidly increased. A warehouse in Manhattan, for which Shroder & Koppel, Inc., is general contractor, will require 1000 tons. Following the recent advance of \$1 a ton in the merchant bar price, distributors in this territory will advance the mill and New York and Pittsburgh warehouse prices on reinforcing bars \$1 a ton, effective March 15.

**Warehouse Business.**—Although the tonnage of material moving from warehouse stocks is increasing, the total is still slightly smaller than usual at this season. Demand for structural material is expanding and there is a fairly active market for galvanized sheets, on which the quoted price of 4.75c. per lb., base, is being maintained with only occasional concessions of \$1 to \$2 per ton. Black sheets are quiet and also subject to concessions of \$1 and more a ton for desirable orders.

**Coke.**—Decline in demand for domestic coke with the approach of spring has affected the furnace coke market and standard furnace is being offered at about \$3 per ton, Connells-ville. Standard foundry is unchanged at \$3.50 to \$3.75 per net ton, Connells-ville. Special brands are quoted at \$4.85 per net ton, ovens, or \$8.56, delivered to northern New Jersey, Jersey City and Newark, and \$9.44 to New York and Brooklyn. By-product coke is quoted at \$9 to \$9.40 per net ton, Newark or Jersey City, and \$10.06, New York or Brooklyn.

**Old Material.**—Prices of all grades of scrap are firmer, with only a moderate volume of tonnage available. No. 1 heavy melting steel is quoted by brokers at \$16 and \$16.25 per ton, delivered to consumers at Coates-ville, Pa., and Claymont, Del., and No. 2 heavy melting steel is being bought at \$13 and occasionally at \$13.25 per ton, delivered on \$13 contracts. Foundry grade stove plate is quiet with dealers buying only for delivery to a Bridgeport, Conn., consumer at \$11.50 per ton, delivered. Steel car axles are strong and as much as \$23.25 per ton, delivered eastern Pennsylvania, is offered. A consumer of scrap at Chrome, N. J., has appointed a New York scrap broker to act as exclusive buying agent.

*Dealers' buying prices per gross ton, f.o.b. New York:*

No. 1 heavy melting steel.	\$12.50 to \$12.85
Heavy melting steel (yard)	8.50 to 9.50
No. 1 hvy. breakable cast.	11.75 to 12.00
Stove plate (steel works)	8.75 to 9.00
Locomotive grate bars	8.75 to 9.00
Machine shop turnings	7.50 to 7.75
Short shoveling turnings	7.50 to 8.00
Cast borings (blast furn. or steel works)	7.00 to 7.25
Mixed borings and turnings	6.25 to 6.50
Steel car axles	18.25 to 18.75
Iron car axles	24.50 to 25.00
Iron and steel pipe (1 in. dia., not under 2 ft. long)	11.75
Forge fire	10.00 to 10.50
No. 1 railroad wrought	12.50 to 13.00
No. 1 yard wrought, long	11.50 to 12.00
Rails for rolling	13.50 to 13.75
Cast iron carwheels	12.50 to 12.75
Stove plate (foundry)	9.00 to 9.50
Malleable cast (railroad)	13.00 to 14.00
Cast borings (chemical)	11.50

*Prices per gross ton, deliv'd local foundries:*

No. 1 machry. cast.	\$16.50
No. 1 hvy. cast (columns, bldg. materials, etc.), cupola size	14.50
No. 2 cast (radiators, cast boilers, etc.)	14.00

50,000 tie plates. Several locomotive plate orders placed with a Cleveland mill total 2500 tons.

**Pig Iron.**—The market continues active in both foundry and malleable grades. Sales by Cleveland interests amounted to 38,000 tons in the week, or slightly more than during the previous week. These included several lots of from 1000 to 2000 tons. Inquiry is still plentiful, many foundries not having covered for the second quarter. The only change in the price situation is an advance of 50c. a ton by some of the Valley furnaces on foundry and malleable iron to \$18 for the former and \$18.50 for the latter. While Valley foundry iron was being freely offered last week in the northern Ohio territory at \$17.50, it is said that all the producers in the Valley district are now asking the higher prices. Cleveland furnaces are adhering to \$18.50 for foundry and malleable iron for outside shipment and another Lake furnace interest holds to \$19. In Michigan, the market on both foundry and malleable grades is firm at \$20. Shipments are equaling the recent heavy volume.

*Prices per gross ton at Cleveland:*

N'th'n fdy., sil.	1.75 to 2.25	\$19.50
S'th'n fdy., 1.75 to 2.25		\$22.50 to 23.00
Malleable		19.50
Ohio silvery, 8 per cent.		29.00
Basic Valley furnace		17.50
Stand. low phos., Valley	26.50 to	27.00

Prices, except on basic and low phosphorus, are delivered Cleveland. Freight rates: 50c. from local furnaces; \$3 from Jackson, Ohio; \$6 from Birmingham.

**Iron Ore.**—A water movement of 60,000,000 tons of Lake Superior ore for this year, or more than during any year since 1918, is predicted by some shippers. The water movement last year was 53,980,874 tons. The expected large increase is based on the present heavy consumption, the outlook for a good year in the steel industry and the low stocks in furnace yards and on docks. While the only definite inquiry for ore is that for 354,000 tons from the Ford Motor Co., consumers are beginning to figure out their requirements, and prices for the season may be named within two weeks. There is talk of an advance of 25c. or more per ton. The balance of ore on Lake Erie docks March 1 was 4,939,417 tons, against 5,987,408 tons on March 1, last year. Shipments from docks during February were 376,786 tons, against 303,114 tons during the same month last year.

**Bolts, Nuts and Rivets.**—Most of

## Cleveland

### New Prices on Bars, Plates and Shapes Established on Contracts—Cold-Rolled Strip Lower

CLEVELAND, March 12.—The market appears to have become well established at the \$1 a ton price advance to 1.95c., Pittsburgh, for steel bars, plates and structural material for the second quarter, mills having closed contracts with many of their customers during the week on this basis. On steel bars, some contracting was done at 1.95c. and 2c., Cleveland, the lower price by Cleveland mills and the higher price by outside mills using Cleveland as a basing point. Some contracting was also done in alloy steel bars, which are unchanged in price for the coming quarter. While specifications against first quarter contracts continue heavy, they do not appear to have been increased appreciably yet by the insistence of the mills that specifications must be in by March 15. Deferred deliveries had previously aroused consumers to get in specifications earlier than they had been accustomed to. Consumers' stocks generally are low.

The automotive industry is still taking a very heavy tonnage of steel and March is expected to be another record-breaking month in motor car production. The leading automobile manufacturers, with only three or four exceptions, are understood to be operating their plants at maximum capacity. Deliveries have become more extended on hot-rolled strip steel, auto body sheets and small angles.

Considerable contracting has been done on hot and cold-rolled strip for the second quarter, but not much in sheets. While some mills are still holding to 2.85c. for cold-rolled strip, others have covered their trade, except small-lot buyers, at 2.75c., applying the new extras.

Two structural awards during the week totaled 5000 tons, but few new inquiries came out. The Wheeling & Lake Erie Railroad is inquiring for

### Warehouse Prices, f.o.b. Cleveland

	Base per lb.
Plates and struc. shapes	3.00c.
Soft steel bars	3.00c.
Reinforc. steel bars	2.25c. to 2.50c.
Cold-fin. rounds and hex.	3.65c.
Cold-fin. flats and sq.	4.15c.
Hoops and bands, No. 12 to 14 in., inclusive	3.25c.
Hoops and bands, No. 13 and lighter	3.65c.
Cold-finished strip	5.95c.
Black sheets (No. 24)	3.50c.
Galvanized sheets (No. 24)	4.45c.
Blue ann'd sheets (No. 10)	3.25c.
No. 9 ann'd wire, per 100 lb.	\$2.95
No. 9 gal. wire, per 100 lb.	3.40
Com. wire nails, base per keg	2.95

\*Net base, including boxing and cutting to length.

the bolt and nut manufacturers have reaffirmed the present discount of 70 per cent off list for the second quarter and they are beginning to close contracts for that delivery. Stove bolts also are unchanged for the second quarter. The volume of bolt and nut business continues heavy, and orders during March are expected to equal those during the first two months of the year. Rivet manufacturers have started to send out contracts bearing the new \$3.10 per 100 lb. price for large rivets, or an advance of \$4 a ton over the present price. These contracts will afford a test of the advance, although some small lots have been sold at the higher price.

**Coke.**—There is more activity in Connellsville foundry coke than recently, this evidently being due to the price advance on by-product coke. The supply of heating coke is somewhat easier. Ohio by-product foundry coke is moving well. This is quoted at \$8.25, ovens.

**Hot-Rolled Strip.**—Specifications continue to come out in very heavy volume from the automotive industry and some producers are getting further behind on shipments. Most mills are committed for four weeks or longer. Consumers are contracting freely for the second quarter at the new prices of 1.90c., Pittsburgh, for wide strip and 2c. for 6-in. and narrower.

**Cold-Rolled Strip.**—The market has settled down to 2.75c., Cleveland and Pittsburgh, for cold-rolled strip for most of the business. In view of the higher net prices, due to the new extras which are being placed in effect, some of the mills appeared willing to cover their larger customers at the 2.75c. price and are asking 2.85c. only for car lots of assorted sizes or for less than car lots. Considerable second quarter business has been taken in contracts.

**Semi-Finished Steel.**—With the demand in excess of the supply, the \$1 a ton price advance on sheet bars, billets and slabs appears to have met little resistance from consumers. The leading local producer reports that it closed contracts during the week with all its customers for its entire second quarter output at \$35 for sheet bars and small billets and \$34 for slabs and for 4-in. and larger billets. Mills are still being crowded with specifications.

**Sheets.**—While a few second quarter contracts have been taken at the \$2 a ton advance in prices on black, blue annealed and galvanized sheets, the market has not yet been definitely established on the higher basis, as several mills are still taking current orders at the old prices. On blue annealed sheets, jobbing mills seem to be finding it necessary to go to 2.10c. to meet continuous mill competition. Even should the price advances become effective, as it is expected they will, a large tonnage taken at the old prices will not be rolled until the second

quarter, yet quite a few makers have contracted for sheet bars at an advance of \$1 a ton for that delivery. With greatly extended deliveries, which were becoming worse, there was a rush to get in sheet orders a week or two ago. This rush has to some extent subsided, although specifications are still heavy.

**Wire Products.**—The market is showing more activity than recently. The seasonal demand for nails is stimulating orders. Old low-priced contracts seem to be about cleaned up and quite a little business is now coming out at the first quarter prices. Considerable business in second quarter contracts has been booked at the higher prices.

**Cold-Finished Steel.**—Quite a few consumers have closed for the second quarter at the 2.35c., Cleveland, price, and some current orders have been taken at the advance. Contract buyers have until March 15 to specify against 2.25c. contracts.

**Reinforcing Bars.**—A Cleveland mill has taken 500 tons for an Akron building, which is the only lot of any size placed during the week. Small lots are in fair demand.

**Warehouse Business.**—The volume is good on most lines except galvanized sheets, which are rather quiet. Deferred mill deliveries are helping jobbers' sales. Prices are firm.

**Old Material.**—Machine shop turnings are being offered in a volume far in excess of the demand, causing this grade to decline \$1 a ton. Cast scrap is scarce and higher. No. 1 railroad heavy melting steel, for which dealers are paying \$17.25 to \$17.50 for delivery to a local mill, is not quite as firm as a week ago and this consumer is offering less than dealers are paying. No. 1 heavy melting steel in lighter grades is firm, bringing \$16 from dealers. Forging crops are easier. Mills in this territory still have considerable scrap due on old contracts and are not in the market.

Prices per gross ton delivered consumers' yards:

Basic Open-Hearth Grades	
No. 1 heavy melting steel	\$15.50 to \$16.00
No. 2 heavy melting steel	15.00 to 15.50
Compressed sheet steel	15.00 to 15.50
Light bundled sheet	
stamp'gs	12.00 to 12.50
Drop forge flashings	13.00 to 13.25
Machine shop turnings	9.75 to 10.00
No. 1 railroad wrought	13.25 to 13.50
No. 2 railroad wrought	16.00 to 16.50
No. 1 busheling	12.50 to 13.00
Pipes and flues	9.00 to 9.50
Steel axle turnings	12.50 to 13.00
Acid Open-Hearth Grades	
Low phos., forging crops	18.50 to 19.00
Low phos., billet, bloom and slab crops	18.50 to 19.00
Low phos. sheet bar crops	18.00 to 18.50
Low phos. plate scrap	18.00 to 18.50
Blast Furnace Grades	
Cast iron borings	11.50 to 11.75
Mixed bor'g and short	
turn'gs	11.50 to 11.75
No. 2 busheling	11.50 to 11.75
Cupola Grades	
No. 1 cast	16.75 to 17.25
Railroad grate bars	11.00 to 12.00
Stove plate	12.00 to 12.50
Rails under 3 ft.	16.75 to 17.25
Miscellaneous	
Railroad malleable	16.00 to 16.50
Rails for rolling	16.25 to 16.50

## Youngstown

### High Rate of Steel Plant Operations Continues

YOUNGSTOWN, March 12.—Iron and steel companies in this district are maintaining production at an exceptionally high rate and expect to establish new records for output in March. Steel ingot output in this area is being maintained by independents at 95 per cent, with 49 of 51 open-hearths active. Finishing mills, with the exception of steel pipe departments, are operating at 90 per cent or better. Production of pipe is the weakest of any finished steel line, averaging only 55 per cent.

Strip mills are suspended over the week-ends only 8 hr. to permit change of shifts and necessary minor repairs.

The Youngstown Sheet & Tube Co. and Republic Iron & Steel Co. are averaging 85 per cent in all departments.

Shortage of steel is causing interruptions to sheet and strip mill operations. Some non-integrated rollers are unable to meet fully their steel needs. Makers of sheet bars and other forms of semi-finished steel say they are engaged in such departments at physical capacity, and have large order books. From present indications, there will be a heavy carryover of unfilled tonnage into the second quarter.

### Site Acquired for Pipe Plant at Chelsea, Mass.

Option on a 30-acre site at Chelsea, Mass., was taken up March 8 by the Intercontinental Pipe & Mining Co., 475 Fifth Avenue, New York, with the intention of erecting a foundry for the production of cast iron gas and water pipe. The buyer was recently incorporated in the United States by the Societe Anonyme des Hauts Fourneaux et Fonderies de Pont-a-Mousson, the largest French maker of cast iron pipe, which has been exporting a sizable tonnage to the United States in recent years.

The site of the proposed plant is the Corey estate in Chelsea, bordering on the Chelsea River and adjacent to the main line of the Boston & Maine Railroad. According to Herbert Kennedy, president Intercontinental Pipe & Mining Co., the property has been surveyed and plans made to dredge the river and erect extensive bulkheads to permit access of ocean-going ships. It is expected that construction work will be begun in about two months and will be completed before the end of the year. The total cost is placed at about \$3,000,000 for a foundry with a capacity of 150,000 tons of pipe annually and to employ about 500 men. The output of cast iron gas and water pipe and fittings will consist of both pit cast and centrifugally cast pipe. No statement has been made by the new company as to the centrifugal casting method to be used.



# Pacific Coast

## Steel Demand Holding Up Well—Prices Steady— Structural Awards Heavy So Far This Year

SAN FRANCISCO, March 9 (*By Air Mail*).—Demand generally is holding up well. There is less tendency among sellers to shade prevailing prices. Intercoastal steamship freight rates on steel will be advanced 2½c. per 100 lb., effective April 1, from 30c. to 32½c. Building activity all along the Coast compared favorably during February with the total for the same month a year ago.

**Pig Iron.**—Most sales and inquiries for foundry pig iron continue to call for small lots.

*Prices per gross ton at San Francisco:*

*Utah basic	.....	\$25.00 to \$26.00
*Utah fdy., sil.	2.75 to 3.25	25.00 to 26.00
**Indian fdy., sil.	2.75 to 3.25	24.00 to 25.00

\*Delivered San Francisco.

\*\*Duty paid, f.o.b. cars San Francisco.

**Bars.**—The two outstanding reinforcing steel bar awards this week were 1500 tons for the Carquinez Straits bridge for the Southern Pacific Co., placed with an unnamed interest, and 900 tons for an apartment building in Los Angeles, also awarded to an unnamed company. Total awards were the largest of any week so far this year. Most of the pending business calls for lots of less than 100 tons. On out-of-stock material, 2.20c. to 2.30c., base, applies on carload lots, with as high as 2.60c. charged on the smaller tonnages. Merchant bars are firm at 2.35c., c.i.f.

**Plates.**—Little plate business is being offered to test the new level of 2.35c., c.i.f. The only award of importance this week was 150 tons for a boiler at Shelton, Wash., for the Rainier Pulp & Paper Co., booked by the Puget Sound Machinery Depot. The Commercial Boiler Works, Seattle, was low bidder on 1691 tons for a siphon at Ellensburg, Wash., for the Yakima project. The Shell Oil Co. has taken no action on its inquiry for six 118,000 bbl. tanks requiring 2000 tons of plates.

**Shapes.**—The award this week of 22,000 tons for the Carquinez Straits bridge brought the total for the year to more than 88,000 tons, far in excess of the total tonnage booked for the same period of any previous year. The Judson-Pacific Co. took 765 tons for an apartment in San Francisco and the McClintic-Marshall Co. secured 200 tons for a rolling mill addition at Pittsburg, 120 tons for a hotel ad-

dition and 120 tons for an apartment building in San Francisco. The General Construction Co. was low bidder on the 1500-ton West Spokane Street bridge in Seattle. Prices on shapes continue firm at 2.35c., c.i.f.

**Cast Iron Pipe.**—A fair tonnage was placed during the week and included 338 tons of 4 and 12-in. Class B pipe for Anaheim, Cal., 171 tons of 8 and 12-in. Class B pipe for Spokane, Wash., 315 tons of 6 and 10-in. Class B pipe for the improvement of Brown's Point Boulevard, Tacoma, Wash., and 250 tons of 6-in. Class 150 pipe for Vancouver, B. C., all placed with the American Cast Iron Pipe Co. San Diego, Cal., placed 171 tons of 4 and 6-in. Class C pipe for the improvement of Lansing Drive and 231 tons of 4 and 6-in. Classes B and C pipe for the improvement of Massachusetts Avenue with the R. E. Hazard Contracting Co. South Gate, Cal., will open bids on March 12 for 494 tons of 6 to 12-in. Class B pipe for the improvement of State Street. George R. Daley was low bidder on 215 tons of 4 and 6-in. Class C pipe for the improvement of El Prado Avenue, San Diego, Cal., and on 144 tons of 4 and 6-in. Class B pipe for the improvement of Plata Avenue, San Diego. Importations of cast iron pipe in December, 1928, totaled 2991 tons, of which 2751 tons entered the

port of Los Angeles. The aggregate imported during 1928 was 29,822 tons, compared with 37,563 tons for 1927. Of the 1928 total, 17,717 tons came from France and 12,105 tons from Belgium. About 20,000 tons entered the port of Los Angeles and 7500 tons cleared through San Francisco, Seattle interests taking 2000 tons.

**Steel Pipe.**—Oil country goods continue to move well in the southern part of California. No large pipe line inquiries are up for figures. Standard steel pipe activity, while good, is confined mostly to small tonnages. Imports of tubular products during 1928 totaled 35,888 tons, compared with 39,167 tons in 1927. Of the 1928 total, more than 30,000 tons was taken by Los Angeles district users. German producers supplied 20,962 tons of the total.

**Coke.**—December, 1928, imports totaled 4442 tons, compared with 3396 tons in November. Imports for the year totaled 66,354 tons, compared with 58,452 tons in 1927. San Francisco melters used 29,495 tons of the total and Los Angeles users 22,721 tons. Of the 1928 total, 44,000 tons came from the United Kingdom, 9000 from the Netherlands and 8500 tons from Germany.

**Imports.**—Importations of other steel products during 1928 included 611 tons of wire rods, compared with 400 tons in the previous year; 7197 tons of nails, against 3455 tons in 1927; 12,481 tons of sheets, compared with 6904 the previous year, and 4919 tons of rails against 7695 tons in 1927.

# Birmingham

## Steel Specifications Increase and Mills Are Well Booked —Pig Iron Shipments Heavy

BIRMINGHAM, March 12.—Pig iron shipments this month are averaging a little better than those of February. Small orders are being booked, largely supplementary to first quarter contracts. Inquiries so far for second quarter are light and involve small tonnages. Prices remain at \$16.50 to \$17. There have been no changes in furnace operations during the past week. Eleven are on foundry, six on basic and one on recarburizing iron.

*Prices per gross ton, f.o.b. Birmingham dist. furnaces:*

No. 2 fdy., 1.75 to 2.25 sil.	\$16.50 to \$17.00
No. 1 fdy., 2.25 to 2.75 sil.	17.00 to 17.50
Basic	16.50

**Finished Steel.**—Specifications have increased during the past two weeks, and in the more important lines they exceed shipments by a wider margin than usual at this season. A well diversified demand continues. Second quarter contracts are being signed. Sheet mills are operating at close to capacity, with sufficient tonnage on the books to keep them engaged for several weeks. Prices are unchanged. Fabricated structural steel inquiries are numerous, but there is slowness in the placing of contracts. The Nash-

ville Bridge Co. has an order for 100 tons for a bridge at Ocean Springs, Miss. The Tennessee company is operating seven open-hearths at Fairfield and seven at Ensley, while the Gulf States Steel Co. continues with four on at Alabama City.

**Cast Iron Pipe.**—The pressure pipe market has improved considerably during the past week. Better weather conditions have brought out delayed buying by municipalities. Orders of the American Cast Iron Pipe Co. include 2500 tons for Jackson, Miss.; 1000 tons for Akron, Ohio; 500 tons for Glendale, Cal.; 500 tons for Normady Park, Wash.; 300 tons for the Memphis Gas Co., Memphis, Tenn.; 500 tons for Minneapolis, Minn.; 349 tons for Glendora, Cal.; 350 tons for Spokane, Wash., and 150 tons for Puyallup, Wash. Bids have been opened on 8000 tons for Bloomington, Ind., and 300 tons for New Orleans. Gadsden, Ala., will open bids this week for about five miles for pipe and New Orleans will open bids on May 1 for 4200 tons. New business and plant operations in the past few weeks have been at a lower rate than at the same

## Warehouse Prices, f.o.b. San Francisco

Base per lb.

Plates and struc. shapes	.....	3.15c.
Soft steel bars	.....	3.15c.
Small angles, ¾-in. and over	.....	3.15c.
Small angles, under ¾-in.	.....	3.55c.
Small channels and tees, ¾-in. to 2¼-in.	.....	3.75c.
Spring steel, ¼-in. and thicker	.....	5.00c.
Black sheets (No. 24)	.....	4.90c.
Blue ann'd sheets (No. 10)	.....	3.80c.
Galv. sheets (No. 24)	.....	5.30c.
Struct. rivets, ½-in. and larger	.....	5.65c.
Com. wire nails, base per keg	.....	\$3.40
Cement c'd nails, 100 lb. keg	.....	3.40

time last year. Prices remain at \$37 to \$38, and show more firmness than at any time in recent weeks.

**Coke.**—Foundry and domestic coke continue in good demand and current production is moving satisfactorily. Prices continue steady at \$5 for both spot and contract.

**Old Material.**—Consumers' stocks have been reduced, and the market is developing a better outlook. Mills are specifying more freely than a week ago and more iron is being moved

from dealers' yards. Prices have not been affected by the improved conditions.

*Prices per gross ton, deliv'd Birmingham dist. consumers' yards:*

Heavy melting steel.....	\$12.50
Scrap steel rails.....	\$12.00 to 12.50
Short shoveling turnings.....	9.00
Cast iron borings.....	8.00
Stove plate.....	13.50
Steel axles.....	20.00
Iron axles.....	22.00
No. 1 railroad wrought.....	10.00 to 10.50
Rails for rolling.....	14.00 to 15.00
No. 1 cast.....	15.00
Tramcar wheels.....	13.00 to 14.00
Cast iron carwheels.....	13.00 to 13.50
Cast iron borings, chem.....	13.50 to 14.00

## St. Louis

### Pig Iron Buying Increases—Steel Business Continues in Good Volume—Large Offerings of Railroad Scrap

ST. LOUIS, March 12.—Buying of pig iron took quite a spurt the last week, the St. Louis Gas & Coke Corporation's sales amounting to 10,500 tons, the largest lot having been 5000 tons of basic to an East Side melter for shipment in March, April and May. One car manufacturer took 1000 tons, another bought 500 tons, an Illinois equipment builder bought 700 tons, a local furnace manufacturer took 500 tons, and 400 tons went to an Iowa furnace manufacturer, all foundry grades for second quarter delivery. A Tennessee melter bought 450 tons and a California company took 250 tons of malleable, also for second quarter. Spot shipments in two lots amounted to 250 tons. Shipments of the local maker continue to exceed production. The leading Southern maker has not yet opened its books for second quarter. The market is firm at unchanged prices.

*Prices per gross ton at St. Louis:*

No. 2 fdy., sil. 1.75 to 2.25, f.o.b.	
Granite City, Ill.....	\$20.00
Malleable, f.o.b. Granite City.....	20.50
N'th'n No. 2 fdy., deliv'd St. Louis.....	22.16
Southern No. 2 fdy., deliv'd.....	20.92
Northern malleable, deliv'd.....	22.16
Northern basic, deliv'd.....	22.16

Freight rates: 75c. (average) Granite City to St. Louis; \$2.16 from Chicago; \$4.42 from Birmingham.

**Coke.**—With warmer weather there has come a let-up in buying of domestic grades of coke. An East Side blast furnace company has contracted for 20,000 to 25,000 tons for the next

12 months. Foundry coke is in good demand.

**Finished Iron and Steel.**—The Granite City Steel Co. reports a satisfactory volume of business in tank plates and tin mill black. Demand for galvanized sheets is still under normal for this time of year on account of the weather, although showing a slight improvement. Demand for blue annealed sheets is quite active, with tonnage sufficient to insure good operations by the Granite City Steel Co. for several weeks. Reports from can manufacturers indicate an immediate pick-up in tin plate. A moderate revival of purchases from the oil fields is reported, and equipment orders from railroads have resulted in a very healthy order book for tank plates. Warehouses have advanced prices on all sheets, except blue annealed, 15c., and structural and boiler rivets 20c. per 100 lb.

## Buffalo

### Blast Furnaces Well Sold Up for Second Quarter—Steel Plant Operations Higher

BUFFALO, March 12.—Most of the Buffalo furnaces are pretty well sold up for second quarter. One producer has stiffened its price for outside shipment to \$18, Buffalo. The Buffalo base remains firm at \$18.50. Business quieted down during the past week. The General Electric Co. is understood to have closed for a total of 8000 tons for all its plants. A 1500-ton inquiry in New Jersey came out during the week. The Bethlehem Steel Corporation has increased its blast furnace operation at Lackawanna to six stacks out of seven. Shipments are large.

*Prices per gross ton, f.o.b. furnace:*

No. 2 fdy., sil. 1.75 to 2.25.....	\$18.50
No. 2X fdy., sil. 2.25 to 2.75.....	19.00
No. 1 fdy., sil. 2.75 to 3.25.....	20.00
Malleable, sil. up to 2.25.....	19.00
Basic.....	17.50
Lake Superior charcoal.....	27.28

**Finished Iron and Steel.**—Steel mill operations have again increased. The Lackawanna plant now has 23 of its

**Old Material.**—The market for old material is virtually unchanged. Consumers of steel and rolling mill grades have been buying more liberally. With warmer weather, railroads were enabled to catch up on their deliveries of material bought on lists, in which they had been several weeks behind. New offerings by railroads are increasing, including the following lists: Pennsylvania, 56,600 tons; Baltimore & Ohio, 10,300 tons; Wabash, 2665 tons; Pere Marquette, 990 tons; Missouri-Kansas-Texas, 1230 tons; International-Great Northern, 650 tons; Kansas City Southern, 540 tons; Ann Arbor, 329 tons; Chicago, Rock Island & Pacific, 125 carloads; Great Northern, 34 carloads; Nickel Plate, 18 carloads; Chicago & Eastern Illinois, 14 carloads; Belt Railway, 13 carloads; Pullman Co. (St. Louis), 7 carloads.

*Dealers' buying prices per gross ton, f.o.b. St. Louis district:*

No. 1 heavy melting or shoveling steel.....	\$13.75 to \$14.25
No. 2 heavy melting or shoveling steel.....	13.00 to 13.50
No. 1 locomotive tires.....	15.00 to 15.50
Miscel. stand.-sec. rails including frogs, switches and guards, cut apart.....	15.50 to 16.00
Railroad springs.....	17.25 to 17.75
Bundled sheets.....	10.00 to 10.50
No. 2 railroad wrought.....	13.75 to 14.25
No. 1 busheling.....	10.25 to 10.75
Cast iron borings and shoveling turnings.....	9.75 to 10.25
Iron rails.....	15.00 to 15.50
Rails for rolling.....	16.50 to 17.00
Machine shop turnings.....	10.00 to 10.50
Heavy turnings.....	10.00 to 10.50
Steel car axles.....	20.50 to 21.00
Iron car axles.....	28.00 to 28.50
Wrot. iron bars and trans.....	21.50 to 22.00
No. 1 railroad wrought.....	17.25 to 17.75
Steel rails, less than 3 ft.....	16.50 to 17.00
Steel angle bars.....	15.00 to 15.50
Cast iron carwheels.....	15.00 to 15.50
No. 1 machinery cast.....	16.00 to 16.50
Railroad malleable.....	17.00 to 17.50
No. 1 railroad cast.....	15.00 to 15.50
Stove plate.....	14.00 to 14.50
Agricult. malleable.....	14.00 to 14.50
Relay. rails, 60 lb and under.....	20.50 to 23.50
Relay. rails, 70 lb. and over.....	26.50 to 29.00

24 open-hearth in use. Most of the finishing mills are on double turn and the roughing mills are on triple turn. Demand for bars and shapes continues good and the prices are firm. Sheet mill operation is around 95 per cent. Prices are firm. Demand for reinforcing bars is fair. Structural commitments are not heavy.

**Old Material.**—The No. 1 heavy melting steel in one of the railroad lists that closed last week is said to

#### Warehouse Prices, f.o.b. Buffalo

*Base per Lb.*

Plates and struc. shapes.....	3.40c.
Soft steel bars.....	3.30c.
Reinforcing bars.....	2.75c.
Cold-fin. flats, sq. and hex.....	4.45c.
Rounds.....	3.95c.
Cold-rolled strip steel.....	5.85c.
Black sheets (No. 24).....	4.20c.
Galv. sheets (No. 24).....	4.85c.
Blue ann'd sheets (No. 10).....	3.50c.
Com. wire nails, base per keg.....	\$3.60
Black wire, base per 100 lb.....	7.75

#### Warehouse Prices, f.o.b. St. Louis

*Base per Lb.*

Plates and struc. shapes.....	3.25c.
Bars, soft steel or iron.....	3.15c.
Cold-fin. rounds, shafting, screw stock.....	3.75c.
Black sheets (No. 24).....	4.25c.
Galv. sheets (No. 24).....	5.10c.
Blue ann'd sheets (No. 10).....	3.45c.
Black corrug. sheets (No. 24).....	4.30c.
Galv. corrug. sheets.....	5.15c.
Structural rivets.....	3.95c.
Boiler rivets.....	3.95c.

*Per Cent Off List*

Tank rivets, 7/8-in. and smaller, 100 lb. or more.....	65
Less than 100 lb.....	60
Machine bolts.....	60
Carriage bolts.....	60
Lag screws.....	60
Hot-press. nuts, sq., blank or tapped, 200 lb. or more.....	60
Less than 200 lb.....	50
Hot-pressed nuts, hex., blank or tapped, 200 lb. or more.....	60
Less than 200 lb.....	50



have brought an equivalent of \$17.65 Buffalo. Not much of the steel came to Buffalo. A Buffalo consumer is said to have purchased 3000 to 5000 tons during the week at above \$17.50, probably \$17.75. No. 1 machinery cast scrap is in good demand at \$16 to \$17 and malleable is stronger. There is a more active demand for blast furnace scrap. Sales of rolled steel wheels and knuckles and couplers at \$19 are reported.

Prices per gross ton, f.o.b. Buffalo consumers' plants:

Basic Open-Hearth Grades	
No. 1 heavy melting steel.	\$16.50 to \$17.75
No. 2 heavy melting steel.	15.00
Scrap rails	17.00 to 18.00
Hydraul. comp. sheets.	15.00
Hand bundled sheets.	12.00 to 12.50
Drop forge flashings	14.00 to 14.50
No. 1 busheling	16.25 to 16.50
Hvy. steel axle turnings.	14.00 to 14.50
Machine shop turnings.	8.00 to 8.50
No. 1 railroad wrought.	13.50 to 14.00
Acid Open-Hearth	
Knuckles and couplers.	19.00 to 19.50
Coil and leaf springs.	19.00 to 19.50
Rolled steel wheels	19.00 to 19.50
Low phos. billet and bloom ends	20.00 to 20.50
Electric Furnace Grades	
Short shov. steel turnings.	13.50 to 14.00
Blast Furnace Grades	
Short mixed borings and turnings	11.50 to 12.50
Cast iron borings	11.50 to 12.50
No. 2 busheling	10.00 to 10.50
Rolling Mill Grades	
Steel car axles	18.75 to 19.25
Iron axles	21.00 to 22.00
Cupola Grades	
No. 1 machinery cast.	16.00 to 17.00
Stove plate	14.50 to 15.00
Locomotive grate bars.	13.50 to 14.00
Steel rails, 3 ft. and under	19.50 to 20.00
Cast iron carwheels.	14.00 to 14.50
Malleable Grades	
Industrial	18.50 to 19.00
Railroad	18.50 to 19.00
Agricultural	18.50 to 19.00

## Alan Wood Co. Changes Name

The Alan Wood Co., recently chartered by the State of Pennsylvania to acquire the Alan Wood Iron & Steel Co., Philadelphia, has changed its name to the Alan Wood Steel Co. The main office, which has been in the Widener Building, Philadelphia, will be removed to Ivy Rock, Pa., March 30.

## Warehouse Prices, f.o.b. Cincinnati

Base per Lb.	
Plates and struc. shapes.	3.40c.
Bars, soft steel or iron.	3.30c.
New billet reinfrc. bars.	3.15c.
Rail steel reinfrc. bars.	3.00c.
Hoops	4.05c.
Bands	3.50c.
Cold-fin. rounds and hex.	3.85c.
Squares	4.35c.
Black sheets (No. 24)	3.90c.
Galvanized sheets (No. 24)	4.75c.
Blue ann't'd sheets (No. 10)	3.45c.
Structural rivets	3.85c.
Small rivets	.65 per cent off list
No. 9 ann't'd wire, per 100 lb.	\$3.00
Com. wire nails, base per keg.	2.95
Cement c'd nails, base 100 lb. keg.	2.95
Chain, per 100 lb.	7.55
Net per 100 Ft.	
Lap-weld steel boiler tubes, 2-in.	\$16.00
4-in.	33.00
Seamless steel boiler tubes, 2-in.	17.00
4-in.	34.00

## Detroit

### Automobile Production Continues Upward Trend—Substantial Gains Over January Output

DETROIT, March 12.—Industrial activity in the Detroit district continues its steady upward trend, with automobile production occupying the center of the stage. February production of cars and trucks showed substantial gains generally over that of January, with the outlook for March still brighter.

February production for the Buick Motor Co. ran approximately 15,000 units, or nearly 5000 greater than in the month previous. The March schedule will be approximately 2000 units higher than February production.

The Chevrolet Motor Co. set a record for February with an output of 121,246 units.

The Chrysler Corporation's combined production for February was 48,000 units, with the March schedule set at 59,000, which will be made up of 11,000 Plymouths, 8000 De Sotos, 15,000 Chryslers, and 25,000 Dodges.

February production by the Ford Motor Co. was 125,984 units. The daily production in the Ford plants has been climbing steadily, and will reach 8000 in the near future.

February was the second largest month in the history of Graham-Paige Motors Corporation, with an output of 10,004 cars, an increase of 76 per cent from January. It is estimated that March production will equal, if not exceed, that of February.

The Hudson Motor Car Co. showed a February production of 36,482 units, which set a new February record for this company.

The Hupp Motor Car Corporation turned out 4161 cars during February, an increase of 483 compared with January.

The Olds Motor Works produced 10,109 cars during February. This is an increase of 2649 over the January figure.

February production for Packard Motor Car Co. stands at 4296 units, slightly under the figure of a month previous, which was 4604.

The Reo Motor Car Co. shipped 3250 units during February, a substantial increase over the figure of 2350, which was the production during the month previous.

The Kelsey-Hayes Wheel Co. is now operating two shifts a day.

No price changes have occurred during the past week on old material in this district.

Dealers' buying prices per gross ton, f.o.b. cars, Detroit:

Hvy. melting and shov. steel	\$14.50 to \$15.00
Borings and short turnings	9.25 to 9.75
Long turnings	8.00 to 8.50
No. 1 machinery cast.	14.00 to 15.00
Automobile cast	20.00 to 21.00
Hydraul. comp. sheets.	14.25 to 14.75
Stove plate	11.00 to 12.00
No. 1 busheling	11.00 to 11.50
Sheet clippings	9.00 to 9.50
Flashings	12.50 to 13.00

## Cincinnati

### Pig Iron Sales of 10,000 Tons Bring Month's Total to 25,000 Tons—Sheet Mills Heavily Booked

CINCINNATI, March 12. — Second quarter buying of pig iron continued brisk the past week, with sales amounting to 10,000 tons. This raises bookings of local dealers since March 1 to about 25,000 tons. The largest transaction consisted of 2800 tons of Northern foundry iron for a Hamilton, Ohio, melter. Other orders included 600 tons of foundry for a southern Indiana consumer and 500 tons for each of three central Indiana users. Further purchases in the next few weeks are expected to be of liberal proportions, and therefore prices are strong. Northern Ohio foundry is quoted at \$18.50, furnace, and Valley iron is reported to be selling at \$18, furnace, or 50c. above the recent schedule. Tennessee and Alabama irons are steady at \$16.50, Birmingham, but sales have been small.

Prices per gross ton, deliv'd Cincinnati:

So. Ohio fdy., sil.	1.75 to 2.25	\$20.39 to \$20.89
Ala. fdy., sil.	1.75 to 2.25	20.19 to 20.69
Ala. fdy., sil.	2.25 to 2.75	20.69 to 21.19
Tenn. fdy., sil.	1.75 to 2.25	20.19
S'th'n Ohio silvery.	8 per cent	27.89 to 28.89

Freight rates, \$1.89 from Ironton and Jackson, Ohio; \$3.69 from Birmingham.

Coke.—There has been no letdown in demand for by-product foundry coke, which is moving in large volume to automobile foundries as well as to jobbing foundries. However, a sharp drop in specifications and orders for domestic grades is noted on account of seasonal conditions. The shortage of by-product foundry coke at Detroit has been somewhat relieved by shipments of Wise County beehive foundry coke. Coke makers in the Wise County district are falling behind in deliveries, despite the fact that oven operations have been increased recently. Effective March 21, the railroad freight rate on by-product coke from Hamilton, Ohio, to Cincinnati will be reduced from \$1.26 to \$1.01 a ton and corresponding reductions will be made from Hamilton to other southern Ohio points. In view of this development, it is considered likely that freight rates from Portsmouth and Ashland to this city also will be cut.

Finished Material.—A further increase in unfilled orders is reported by the leading sheet steel producer,

whose bookings since Feb. 1 have been at the rate of 150 per cent of capacity. All of its units are operating at full capacity, with some scheduled throughout the second quarter at the present rate. Automobile companies are taking large tonnages of sheets and electrical manufacturers and the jobbing trade also are specifying freely. Prices are firm.

**Old Material.**—While the market is lagging and some weak spots are discernible, prices are being fairly well maintained. Dealers are of the opinion that quotations are likely to stay at or near the present level during the next few weeks. District steel plants are not buying for future delivery, and their lack of interest has been a depressing factor. The Louisville & Nashville is reported to have requested an increase of 30c. a ton in the switching rate from Cincinnati to the Andrews Steel Co., Newport, Ky.

*Dealers' buying prices per gross ton, f.o.b. cars, Cincinnati:*

Heavy melting steel.....	\$13.75 to \$14.25
Scrap rails for melting.....	13.75 to 14.25
Loose sheet clippings.....	10.00 to 10.50
Bundled sheets .....	11.00 to 11.50
Cast iron borings.....	9.75 to 10.25
Machine shop turnings.....	9.25 to 9.75
No. 1 busheling .....	11.00 to 11.50
No. 2 busheling .....	7.00 to 7.50
Rails for rolling .....	14.50 to 15.00
No. 1 locomotive tires.....	14.25 to 14.75
No. 2 railroad wrought.....	13.75 to 14.25
Short rails .....	18.50 to 19.00
Cast iron carwheels .....	12.75 to 13.25
No. 1 machinery cast.....	19.25 to 19.75
No. 1 railroad cast .....	15.25 to 15.75
Burnt cast .....	10.50 to 11.00
Stove plate .....	10.50 to 11.00
Brake shoes .....	10.50 to 11.00
Railroad malleable .....	15.25 to 15.75
Agricultural malleable ..	14.25 to 14.75

## Canada

### Substantial Pig Iron Buying for Second Quarter

TORONTO, ONT., March 12.—A forward buying movement of pig iron has developed in the past few days. With books open for second quarter contracts, producers report that a large volume of business has been closed in foundry and malleable iron for delivery to the end of June. In most instances, contracts call for larger tonnages than those of first quarter, which in turn was better than any quarter last year. Spot sales are also on the up-grade. Tonnages involved in spot orders are usually larger than those placed earlier in the year, and repeat orders are more frequent. Practically all industrial concerns associated with the iron and steel industry are busy. The daily iron melt averages about 85 per cent. Second quarter contracts are being accepted at current prices, which are unchanged from last week.

*Prices per gross ton:*

Delivered Toronto	
No. 1 fdy., sil. 2.25 to 2.75.....	\$23.60
No. 2 fdy., sil. 1.75 to 2.25.....	23.60
Malleable .....	23.60

Delivered Montreal	
No. 1 fdy., sil. 2.25 to 2.75.....	\$25.00 to 25.50
No. 2 fdy., sil. 1.75 to 2.25.....	25.00 to 25.50
Malleable .....	25.00 to 25.50
Basic .....	24.00 to 24.50

Imported Iron, Montreal Warehouse	
Summerlee .....	\$33.50
Carron .....	33.00

**Structural Steel.**—Several contracts have been closed for lots ranging from 100 to 2500 tons, and the total for the week was well up to the recent high average. The Dominion Bridge Co., with fabricating plants in several cities in Canada, secured the contract for 2000 tons of steel for the plant addition for the Northern Electric Co., Montreal, Que.; also 1000 tons for Canadian Pacific Railroad's Paliser Hotel at Calgary, Alta., and several others of smaller tonnage. Several steel contracts are pending for early closing, including 2225 tons of structural steel and 310 tons of reinforcing bars for a building in Montreal for the John Murphy Co. and 1200 tons for a bridge over False Creek at Vancouver, B. C.

**Old Material.**—Scrap business continues to show strength as a result of the general improvement in the iron and steel industry. Some contract buying is reported, but in most instances dealers are satisfied with spot

orders. The uncertainty of the future supply does not encourage dealers to take on large commitments. Spot business, however, is in good volume, with a steady flow of orders for both iron and steel grades. Prices offered by dealers have not been changed during the past week.

*Dealers' buying prices:*

	Per Gross Ton	
	Toronto	Montreal
Heavy melting steel	\$9.50	\$8.00
Rails, scrap .....	10.00	9.00
No. 1 wrought.....	9.00	\$11.00 to 11.50
Machine shop turnings .....	7.00	5.00
Boiler plate .....	7.00	6.00
Heavy axle turnings .....	7.50	7.50
Cast borings .....	7.50	5.00
Steel turnings .....	7.00	6.50
Wrought pipe .....	5.00	6.00
Steel axles .....	14.00	20.00
Axles, wrought iron .....	16.00	22.00
No. 1 machinery cast .....	16.00 to 17.00	13.00
Stove plate .....	13.00	13.00
Standard carwheels.....	16.00	16.00
Malleable .....	13.00	13.00
Per Net Ton		
No. 1 machinery cast	15.00	.....
Stove plate .....	9.00	.....
Standard carwheels	13.00	.....
Malleable scrap .....	13.00	.....

## Boston

### Firmer Pig Iron Prices Fail to Stimulate Much Second Quarter Buying—Cast Iron Pipe More Active

BOSTON, March 12.—Firmer prices on Buffalo pig iron so far have failed to drive foundries to cover their second quarter requirements. Bookings the past week were comparatively small and mostly on a delivered basis of \$23.41, or a shade less, for No. 2X iron and at \$23.91 for No. 1. These prices are equivalent to \$18 a ton, Buffalo furnace, for No. 2 plain. No offerings of Buffalo iron were made last week at less than \$17.50 a ton, base furnace. The Mystic Iron Works took more than half of the 2000 tons bought for the General Electric Co.'s New England plants. Two or three of the largest New England melters are feeling out the market for sizable tonnages and several smaller foundries give indication of buying shortly, but there are no open inquiries of importance.

*Foundry iron prices per gross ton deliv'd to most New England points:*

*Buffalo, sil. 1.75 to 2.25.....	\$21.91 to \$22.91
*Buffalo, sil. 2.25 to 2.75.....	22.41 to 23.41
East. Penn., sil. 1.75 to 2.25.....	24.15 to 24.65
East. Penn., sil. 2.25 to 2.75.....	24.65 to 25.15
Va., sil. 1.75 to 2.25.....	25.21
Va., sil. 2.25 to 2.75.....	25.71
Ala., sil. 1.75 to 2.25.....	23.41 to 25.77
Ala., sil. 2.25 to 2.75.....	23.91 to 26.27

Freight rates: \$4.91 all rail from Buffalo; \$3.65 from eastern Pennsylvania; \$5.21 all rail from Virginia; \$6.91 to \$8.77 from Alabama.

\*All rail rate.

**Finished Material.**—The Bethlehem Steel Co. was the only bidder on 1050 tons of rails, bids for which were opened by the Boston Transit Commission on March 11. The tonnage was divided into five lots and ranged from \$49.28 to \$64.28 a ton, on cars Boston, for first quality rails and from \$47.13 to \$62.13 a ton on second quality. The Transit Commission on March 14 will close bids on 295,000 lb. of angle bars, tie plates and shims, and on a lot of track bolts, screw spikes and drive spikes.

**Cast Iron Pipe.**—Boston has awarded approximately 2500 tons of 6 to 16-in. pipe to the Warren Foundry & Pipe Co., and Quincy, Mass., let 500 tons of 6 to 12-in. stock to the same foundry. The United States Cast Iron Pipe & Foundry Co. was awarded 350 tons of 6 to 12-in. pipe by Springfield, Mass., and Concord, N. H., awarded 150 tons of 6 and 8-in. pipe to R. D. Wood & Co. Lowell, Mass., awarded 100 tons of 6 and 8-in. pipe to the Lowell Iron & Steel Co., and it is reported a Northern foundry will supply that company with the material. Medford, Mass., rejected all bids for 300 tons of 6, 8 and 12-in. pipe, and has called for new bids. The United States Cast Iron Pipe & Foundry Co.

### Warehouse Prices, f.o.b. Boston

Base per Lb.	
Plates .....	3.365c.
Structural shapes—	
Angles and beams .....	3.365c.
Tees .....	3.365c.
Zees .....	3.465c.
Soft steel bars, small shapes.....	3.265c.
Flats, hot-rolled .....	4.15c.
Reinforcing bars.....	3.265c. to 3.54c.
Iron bars—	
Refined .....	3.265c.
Best refined .....	4.60c.
Norway rounds .....	6.60c.
Norway squares and flats.....	7.10c.
Spring steel—	
Open-hearth .....	5.00c. to 10.00c.
Crucible .....	12.00c.
Tie steel .....	4.50c. to 4.75c.
Bands .....	4.015c. to 5.00c.
Hoop steel .....	5.50c. to 6.00c.
Cold-rolled steel—	
Rounds and hex.....	*3.55c. to 5.55c.
Squares and flats.....	*4.05c. to 7.05c.
Toe calk steel .....	6.00c.
Rivets, structural or boiler.....	4.50c.
Per Cent Off List	
Machine bolts .....	50 and 5
Carriage bolts .....	50 and 5
Lag screws .....	50 and 5
Hot-pressed nuts .....	50 and 5
Cold-punched nuts .....	50 and 5
Stove bolts .....	70 and 10

\*Including quantity differentials.



was the low bidder at Woonsocket, R. I., on 4 to 18-in. 1929 pipe requirements, but the amount to be bought has not been decided. Original bids were on 600 tons. Recently 3208 tons of 6 to 30-in. French pipe was unloaded at Providence, R. I., for the East Greenwich, R. I., water system. Prices quoted openly on domestic pipe are: 4-in., \$49.10 a ton, delivered common Boston freight rate points; 6 to 16-in., \$44.10; 20-in., \$43.60. A \$3 differential is asked on Class A and gas pipe.

**Coke.**—The coke situation remains unchanged. By-product foundry coke is moving freely at \$11 a ton, delivered within a \$3.10 freight rate zone, with ovens somewhat pushed to make scheduled deliveries, owing to the continued heavy demand for all sizes of domestic fuel.

**Old Material.**—The movement of scrap out of New England is only moderately large. Most of the shipments consist of heavy melting steel, steel turnings, forge flashings, forge scrap, mixed borings and turnings and long bundled skeleton. Axles are moving in limited quantities. New England foundries continue to supply their machinery cast wants from yards within trucking distance, and

are buying fairly liberally. There is a continued call for railroad malleable, but supplies are limited. A steamer finished loading scrap here March 6 for shipment to Danzig. It was expected to take more than 5000 tons, but could load only 4552 tons. The export scrap market is nominal at \$10.75 to \$11.50 per gross ton, f.a.s. for No. 1 steel, and at \$9.50 to \$10.25 for 3/16-in. scrap. A loading charge of \$1.50 a ton has to be absorbed by the seller.

*Buying prices per gross ton, f.o.b. Boston rate shipping points:*

No. 1 heavy melting steel	\$12.00 to \$12.25
Scrap T rails	12.00 to 12.25
Scrap girder rails	11.00 to 11.50
No. 1 railroad wrought	11.00 to 11.25
No. 1 yard wrought	9.00 to 9.25
Machine shop turnings	6.25 to 6.50
Cast iron borings (steel works and rolling mill)	6.50 to 7.00
Bundled skeleton, long	9.00 to 9.50
Forge flashings	10.00 to 10.25
Blast furnace borings and turnings	6.00 to 6.25
Forge scrap	9.00 to 9.50
Shafting	15.00 to 15.25
Steel car axles	16.50 to 17.00
Wrought pipe 1 in. in diameter (over 2 ft. long)	10.75 to 11.00
Rails for rolling	12.25 to 12.50
Cast iron borings, chemical	10.00 to 10.50

*Prices per gross ton delivered consumers' yards:*

Textile cast	\$14.50 to \$15.00
No. 1 machinery cast	16.00 to 16.50
No. 2 machinery cast	14.00 to 14.50
Stove plate	11.00 to 11.50
Railroad malleable	17.50 to 18.00

South Australian Railways have ordered eight gasoline rail-motor cars from J. G. Brill Co.

Boston & Maine has ordered five 2-8-4 type locomotives from Lima Locomotive Works, Inc.

Illinois Terminal Railroad System is inquiring for three Mikado type locomotives.

New York, Ontario & Western will buy 10 4-8-2 type locomotives and six extra tenders.

Pere Marquette has placed orders for 10 switching locomotives with Baldwin Locomotive Works.

New York, Chicago & St. Louis is inquiring for 250 50-ton gondola cars.

## Machine Tool Orders Reach a High Peak

FOR the first time since the boom of 1919-1920, the three months' average of machine tool orders crossed the 300 mark in February, the index for that month having reached 300.8, according to E. F. Du Brul, manager National Machine Tool Builders' Association.

Net orders in February were 333.6, compared with 290.1 in January. Although shipments in February, a short month, rose to 303 from 255.4 in January, unfilled orders continued to mount and touched 701.6, compared with 676 in January, showing that machine tool plants have more than two months' work on hand.

## Reinforcing Steel

### New York Warehouse Will Take 1000 Tons

AWARDS of slightly more than 6000 tons included no projects of outstanding size, but several jobs require from 400 to 900 tons. New projects, calling for over 3000 tons, included 1000 tons for a warehouse in New York. Awards follow:

NEW YORK, 400 tons, foundations for office building at 1 Wall Street; from Foundation Co., general contractor, to Concrete Steel Co.

AKRON, OHIO, 500 tons, Ohio Bell Telephone building, to Bourne-Fuller Co.

CHICAGO, 100 tons, building for Union Stock Yards Co., to Inland Steel Co.

CHICAGO, 300 tons, public school, to Concrete Steel Co.

CHICAGO, 100 tons, commercial building, to Barton Spiderweb System.

CHICAGO, 450 tons, public school, to unnamed bidder.

CHICAGO, 400 tons, Leader store building, to unnamed bidder.

CHICAGO, 360 tons, building for Rusnak Furniture Co., to Inland Steel Co.

CHICAGO, 400 tons of concrete reinforcing mesh, Mercantile Mart, to Olney J. Dean & Co.

OAK PARK, ILL., 400 tons, store building, to Calumet Steel Co.

MINNEAPOLIS, 600 tons, building for Sears, Roebuck & Co., to unnamed bidder.

MINNEAPOLIS, MINN., 300 tons, grain elevator, to Inland Steel Co.

WICHITA, KAN., 800 tons, elevator for Pillsbury Milling Co., to Sheffield Steel Corporation.

LOS ANGELES, 900 tons, apartment building, 414 North Rossmore Avenue, to unnamed bidder.

### Reinforcing Bars Pending

Inquiries for reinforcing steel bars include the following:

NEW YORK, 1000 tons, warehouse in Varick Street; Shroder & Koppel, Inc., general contractor.

FLORAL PARK, N. Y., 100 tons, school building; L. N. Neckerman, low bidder on general contract.

BUFFALO, 100 tons, apartment building.

MAYWOOD, ILL., 300 tons, Veterans' Hospital.

CHICAGO, 100 tons, Farragut public school.

CHICAGO, 430 tons, apartment building at Seventy-second Street and Cyril Avenue.

CHICAGO, 300 tons, apartment building at Hyde Park Boulevard and Cornell Avenue.

CHICAGO, 300 tons, apartment building at Oakdale and Commonwealth Avenues.

CHICAGO, 140 tons, apartment building; R. B. Golyer, architect.

CHICAGO, 120 tons, Marshall High School; Great Lakes Construction Co., general contractor.

SEATTLE, 185 tons, West Spokane Street bridge; General Construction Co., low bidder.

### Greater Output of Trackwork

Production of trackwork for T-rail track of 60 lb. and heavier amounted to 11,795 net tons in February, according to the American Iron and Steel Institute. This is the largest total since last June. It compares with 9996 tons in January and with 11,371 tons in February of last year.

## Railroad Equipment

### Freight Car Inquiries Total 750

THE past week has been quiet in freight car orders, but the total of cars to be bought has been increased by 750. Of these, 300 are for the Southern Pacific, 200 for the Northern Pacific and 100 for the Mississippi Central. The Norfolk & Western has ordered 1000 hopper car bodies. Locomotive orders totaled 31, of which 16 are for the Southern Pacific and 10 for the Pere Marquette. Details of the week's business follow:

Southern Pacific has ordered 16 locomotives from Baldwin Locomotive Works and will buy 300 50-ton flat cars.

Northern Pacific is inquiring for 200 flat cars.

St. Louis Southwestern has ordered 15 caboose car underframes from Virginia Bridge & Iron Co.

Chicago, Rock Island & Pacific is inquiring for 500 box car underframes for cars to be built in its Armourdale, Kan., shops and is also inquiring for 100 ice car underframes.

Illinois Central has ordered 12 coaches and eight chair cars from American Car & Foundry Co. and six baggage-mail, five baggage-express and five horse-express cars from St. Louis Car Co.

Eric Railroad is inquiring for 30 suburban coaches, 10 baggage-express cars and 15 extra locomotive tenders.

Chesapeake & Ohio is inquiring for three mail express cars.

Norfolk & Western has ordered 1000 hopper car bodies from Ralston Steel Car Co.

Baltimore & Ohio is inquiring for five colonial dining and 15 baggage cars.

Mississippi Central is inquiring for 50 40-ton automobile cars and 50 40-ton box cars.

# Non-Ferrous Metal Markets

## Copper Reaches 20 Cents, Tin Quiet and Steady, Lead Active and Strong, Zinc Sales Moderate

NEW YORK, March 12.

**Copper.**—Because of the significance of the February statistics, made public today, the market took a sudden turn upward, and sales of electrolytic copper were easily made at 20c., delivered in the Connecticut Valley, with nothing available under this. This is an advance of ½c. per lb. over yesterday's price. Statistics for last month showed a decline in stocks of refined copper of about 7000 tons and of about 17,000 tons in refined and blister copper. This brought the

THE WEEK'S PRICES. CENTS PER POUND FOR EARLY DELIVERY						
	Mar. 12	Mar. 11	Mar. 9	Mar. 8	Mar. 7	Mar. 6
Lake copper, New York.....	20.12½	19.62½	19.62½	19.62½	19.62½	19.62½
Electrolytic copper, N. Y.*.....	19.75	19.25	19.25	19.25	19.25	19.25
Straits tin, spot, N. Y.....	48.37½	48.75	48.75	48.87½	48.50	48.55
Lead, St. Louis.....	7.15	7.15	7.15	7.15	7.15	7.15
Lead, New York.....	7.25	7.25	7.25	7.25	7.25	7.25
Zinc, East St. Louis.....	6.35	6.35	6.35	6.35	6.35	6.35
Zinc, New York.....	6.70	6.70	6.70	6.70	6.70	6.70

\*Refinery quotation; price ¼c. higher delivered in the Connecticut Valley.

total stocks of refined metal to around 55,000 tons at the end of the month, or one of the lowest totals in several months. Shipments exceeded production and, while output at the mines showed a daily rate in February about 200 tons larger than the best in recent months, it was not as large as expected. Deliveries into consumption thus far in March are easily the largest of any month on record. Definite information as to the attitude of most producers is difficult to obtain today. Some of them have made sales for July at 20c., but are giving out the metal sparingly. Others are believed to be waiting for higher prices, while several are uncertain as to just what course the market will take from now on, though higher prices are believed inevitable. It is stated that some domestic consumers still

need metal for April-May delivery and that one consumer was asking today for 500,000 lb. for immediate delivery. Foreign buying has been on a large scale for the past week, or at the rate of about 3000 tons per day, confined largely to April-May metal. They have bought very little for June delivery. The quotation of Copper Exporters, Inc., today was 19.75c., c.i.f. usual European ports, but it is expected this will be advanced to 20.25c. tomorrow. Lake copper is also higher at 20c. to 20.12½c., at which levels sales were made today.

**Tin.**—Sales of Straits tin for the week ended Saturday, March 9, were about 1000 tons. Consumers took nearly all the metal, which was mostly for nearby delivery. The buying was confined to a few consumers. Yesterday about 100 to 150 tons changed

### Metals from New York Warehouse Delivered Prices Per Lb.

Tin, Straits pig .....	50.50c. to 51.50c.
Tin, bar .....	52.50c. to 53.50c.
Copper, Lake .....	20.50c.
Copper, electrolytic.....	20.25c.
Copper, casting .....	20.00c.
Zinc, slab .....	7.50c. to 8.00c.
Lead, American pig.....	8.00c. to 8.50c.
Lead, bar .....	10.00c. to 10.50c.
Antimony, Asiatic .....	11.50c. to 12.50c.
Aluminum No. 1 ingots for re-	
melting (guar'nt'd over 99%	
pure) .....	25.00c. to 26.00c.
Alum. ingots, No. 12 alloy ..	24.00c. to 25.00c.
Babbitt metal, commerc'l	
grade .....	30.00c. to 40.00c.
Solder, ½ and ¼ .....	31.50c. to 32.50c.

### Metals from Cleveland Warehouse Delivered Prices Per Lb.

Tin, Straits pig.....	54.00c.
Tin, bar .....	56.00c.
Copper, Lake .....	20.63c.
Copper, electrolytic .....	20.25c.
Copper, casting .....	18.13c.
Zinc, slab .....	8.00c.
Lead, American pig .....	7.90c. to 8.00c.
Lead, bar .....	10.00c.
Antimony, Asiatic .....	16.00c.
Babbitt metal, medium grade.....	19.50c.
Babbitt metal, high grade.....	58.00c.
Solder, ½ and ¼ .....	34.00c.

### Rolled Metals from New York or Cleveland Warehouse

Delivered Prices, Base Per Lb.

<b>Sheets—</b>	
High brass .....	23.37½c. to 24.37½c.
Copper, hot rolled,	
base sizes .....	28.12½c. to 29.12½c.
Copper, cold rolled,	
14 oz. and heavier,	
base sizes .....	30.37½c. to 31.37½c.
<b>Seamless Tubes—</b>	
Brass .....	28.25c. to 29.25c.
Copper .....	29.37½c. to 30.37½c.
Brazed Brass Tubes.....	31.37½c. to 32.37½c.
Brass Rods .....	21.12½c. to 22.12½c.

### From New York Warehouse

Delivered Prices, Base Per Lb.

Zinc sheets (No. 9),	
casks .....	10.00c. to 10.50c.
Zinc sheets, open.....	11.00c. to 11.50c.

## Non-Ferrous Rolled Products

Mill prices on brass and copper products were advanced in amounts ranging from ¾c. to 1c. on March 12. Lead full sheet prices were increased ¼c. on March 6 and are now quoted at 11c. to 11.25c., base. Prices on zinc sheets are unchanged.

### List Prices, Per Lb., f.o.b. Mill

On Copper and Brass Products, Freight up to 75c. per 100 Lb. Allowed on Shipments of 500 Lb. or Over

<b>Sheets—</b>	
High brass .....	24.37½c.
Copper, hot rolled.....	29.75c.
Zinc .....	9.75c.
Lead (full sheets).....	11.00c. to 11.25c.
<b>Seamless Tubes—</b>	
High brass .....	29.00c.
Copper .....	30.75c.

<b>Rods—</b>	
High brass .....	21.87½c.
Naval brass .....	24.12½c.

<b>Wire—</b>	
Copper .....	21.87½c.
High brass .....	24.75c.

Copper in Rolls.....	28.75c.
Brazed Brass Tubing.....	31.12½c.

### Aluminum Products in Ton Lots

The carload freight rate is allowed to destinations east of Mississippi River and also to St. Louis on shipments to points west of that river.

<b>Sheets, 0 to 10 gage, 3 to 30 in.</b>	
wide .....	33.00c.
Tubes, base .....	42.00c.
Machine rods .....	34.00c.

## Old Metals, Per Lb., New York

Buying prices represent what large dealers are paying for miscellaneous lots from smaller accumulators and selling prices are those charged customers after the metal has been properly prepared for their uses.

	Dealers' Buying Prices	Dealers' Selling Prices
Copper, hvy. crucible.....	16.50c.	18.50c.
Copper, hvy. and wire.....	16.00c.	17.50c.
Copper, light and bot-		
tombs .....	14.00c.	15.50c.
Brass, heavy.....	9.50c.	11.00c.
Brass, light.....	8.00c.	9.25c.
Hvy. machine composi-		
tion .....	13.00c.	14.50c.
No. 1 yel. brass turn-		
ings .....	10.25c.	11.25c.
No. 1 red brass or		
compos. turnings.....	12.00c.	13.25c.
Lead, heavy .....	6.00c.	6.50c.
Lead, tea .....	5.00c.	5.50c.
Zinc .....	3.50c.	4.00c.
Sheet aluminum.....	13.50c.	15.50c.
Cast aluminum.....	12.00c.	14.00c.

## Rolled Metals, f.o.b. Chicago Warehouse

(Prices Cover Trucking to Customers' Doors in City Limits)

<b>Sheets—</b>		Base Per Lb.
High brass .....	23.75c.	
Copper, hot rolled.....	29.12½c.	
Copper, cold rolled, 14 oz. and		
heavier .....	31.37½c.	
Zinc .....	10.00c.	
Lead, wide .....	10.55c.	
<b>Seamless Tubes—</b>		
Brass .....	28.62½c.	
Copper .....	30.12½c.	
<b>Brass Rods .....</b>		21.50c.
<b>Brazed Brass Tubes .....</b>		21.75c.



hands and today the market was a little less active and easier, with spot Straits tin quoted at 48.37½c., New York. London prices today were lower than a week ago, with spot standard quoted at £218 5s., future standard at £219 and spot Straits at £220 15s. The Singapore market today was £223.

**Lead.**—Good buying of lead has featured the market practically every day, despite the advance by the leading interest on Wednesday, March 6, of its contract price from 7.10c. to 7.25c., New York. At St. Louis, quotations also were advanced to 7.15c. on the same day. Thus far, the Mexican situation has had no effect on this market.

**Zinc.**—February statistics showed an increase of about 5000 tons in stocks of slab zinc, compared with January. Sales of prime Western are reported to be fairly large each day, with a good total for each week. Prices continue firm and unchanged at 6.35c., East St. Louis, or 6.70c., New York. The price of ore at \$41 was again unchanged at the end of last week. Production for the week was about 13,000 tons, with shipments a little over 14,000 tons, re-

ducing the ore surplus to about 15,400 tons.

**Antimony.**—The market is quiet. Chinese metal is quoted at 9.37½c. to 9.50c., New York, duty paid, for all positions.

**Nickel.**—Ingot and shot nickel in wholesale lots is quoted unchanged at 35c. and 36c. per lb. respectively. Electrolytic nickel in cathode form is obtainable on the same basis as shot.

**Aluminum.**—Virgin metal, 98 to 99 per cent pure, is obtainable at 23.90c. per lb., delivered.

#### Non-Ferrous Metals at Chicago

CHICAGO, March 12.—Non-ferrous metals are moving in smaller volume. Prices generally are strong with advances noted in lead and antimony.

*Prices per lb., in carload lots:* Lake copper, 19.62½c.; tin, 49.50c.; lead, 7.35c.; zinc, 6.45c.; in less-than-carload lots: antimony, 10.50c. On old metals we quote copper wire, crucible shapes and copper clips, 14.62½c.; copper bottoms, 13.12½c.; red brass, 12.87½c.; yellow brass, 9.62½c.; lead pipe, 5.62½c.; zinc, 3.62½c.; pewter, No. 1, 27.62½c.; tin foil, 27.62½c.; block tin, 40.12½c.; aluminum, 12.87½c.; all being dealers' prices for less-than-carload lots.

### Locomotive Shipments Remain at Low Ebb

WASHINGTON, March 9.—Twenty-three railroad locomotives were shipped from the principal manufacturing plants in February, against a similar number in January, according to the Department of Commerce. But only two were for export in February; while the January export units numbered 11, or almost half the total. The total is the smallest for any month in several years, comparing with 59 in February, 1928, and 80 in February, 1927. Of the February shipments, 20 were steam locomotives and one was an electric locomotive for the domestic market, while both of the locomotives exported were steam units.

Unfilled orders at the end of February represented 339 units, against 278 at the end of January.

### Foundry Equipment Business Greatly Improved

At the annual meeting of the Foundry Equipment Manufacturers' Association, held in Cleveland on March 5, reports of members on business conditions showed that the average of sales for the first two months of this year was 90 per cent ahead of the corresponding period in 1928. "What Is Becoming of the Foundryman's Dollar?" was the subject of an address by L. P. Robinson, sales manager Werner G. Smith Co., Cleveland, and C. J. Stark, president Penton Publishing Co., Cleveland, spoke on the business outlook.

Henry W. Standard, president Northern Engineering Works, Detroit, was elected president; Arthur

F. Jensen, president Hanna Engineering Works, Chicago, vice-president, and H. Cole Estep, vice-president Penton Publishing Co., was re-elected secretary-treasurer. M. C. Sammons, secretary Wadsworth Core Machine & Equipment Co., Akron, Ohio, was made a director for the year, 1929, and J. P. Jones, manager of sales machinery manufacturers section, General Electric Co., Schenectady, N. Y., for the years 1929 to 1931.

### Wheeling and Columbia Profits Increased

The Wheeling Steel Corporation, Wheeling, W. Va., had net profits in 1928, after all charges except dividends, of \$6,443,739, compared with \$4,028,916 in the preceding year, and with \$5,006,460 in 1926. During the past year the company produced 839,026 tons of pig iron and 1,287,464 tons of steel ingots. In 1927 and 1926 the corresponding figures were 821,215 and 709,950, and 1,147,867 and 1,242,971 tons. The value of sales exclusive of inter-company shipments was \$78,073,001 in 1928, \$72,596,950 in 1927 and \$83,427,942 in 1926. Inventories, as of Dec. 31, 1928, amounted to \$27,166,881, against \$25,684,633 on the corresponding date in 1927 and \$25,369,181 in 1926. In commenting upon the situation the officers stated that "there were no material increases in selling prices during the year and the profits shown may be, for the most part, attributable to the reduction of operating costs which were considerably lower than in preceding years, and to a slight increase in the volume of business."

Net profits during 1928 of the Co-

lumbia Steel Corporation, San Francisco, amounted to \$1,465,048, compared with \$1,066,399 in the previous year and with \$1,090,272 in 1926. The company's gross sales were increased 15.9 per cent, its gross volume of tonnage was increased 26.4 per cent and its net earnings were increased 37.4 per cent in 1928 over 1927. President Joseph D. Grant stated in the annual report that "at present the market of the company's products looks much more favorable than at this time in 1928."

### Merger of Allegheny and West Penn Companies

Negotiations are understood to be almost completed whereby the Allegheny Steel Co., Breckenridge, Pa., will acquire control of the West Penn Steel Co., the plant of which is adjacent to that of the Allegheny company.

The West Penn Steel Co., which was organized about 20 years ago, has specialized in the production of automobile body and electrical sheets, which are important products of the Allegheny Steel Co., also. The West Penn company works, built in 1909, includes four basic open-hearth furnaces with a rated capacity of 80 tons each; three four-hole soaking pits; a 30-in. three-high sheet bar mill; 12 sheet and pair furnaces; 10 hot black sheet mills, 26-in. and 28-in. by 34-in. to 64-in., with a range of rolling limits of Nos. 3 to 29 gage, 20 in. to 54 in. wide and 60 in. to 144 in. long; 12 single stands of 24-in. rolls; 17 box annealing furnaces; four pickling machines and 12 pickling tanks. The steel works has an annual rated capacity of 150,000 gross tons of ingots.

Allegheny Steel Co. has eight basic and one acid open-hearth furnaces, with an annual rated capacity of 222,000 gross tons of ingots (210,000 tons basic and 12,000 tons acid steel). It has 21 hot black sheet mills. Besides sheets, the company produces skelp, tubes, both welded and seamless (the latter being made by the Delaware Seamless Tube Co., Auburn, Pa., a subsidiary), pressed steel and hot and cold stampings and commercial steel castings.

### New Motor Drive for Strip Mill

The Stanley Works will install at the American Tube & Stamping Co., a subsidiary, Bridgeport, Conn., five synchronous motors of from 700 hp. to 1400 hp. and two variable-speed SK motors of 100 hp., together with the necessary control equipment, to be furnished by the Westinghouse Electric & Mfg. Co. The synchronous motors will be directly connected with the various stands of a combination 20-in., 14-in. and 12-in. strip mill of the cross-country type, while the two d.c. motors will be used to drive the edging rolls.

# Fabricated Structural Steel

## Awards of 29,300 Tons—27,400 Tons Pending for River Barges—47,000 Tons in New Projects

**A**WARDS reported during the week totaled 29,300 tons, the largest having been a factory building at Toledo, Ohio, and a steel mill at Chicago, requiring 3000 tons each. New projects amounted to 50,000 tons and included 27,400 tons for river barges, 50 for the Mississippi River Commission and 37 for a steel company. Awards follow:

WORCESTER, MASS., 225 tons, Worcester Pressed Steel Co. plant, to Eastern Bridge & Structural Co.  
 LYNN, MASS., 215 tons, power house addition, to Eastern Bridge & Structural Co.  
 EVERETT, MASS., 100 tons, Beacon Oil Co. unit, to Boston Bridge Works, Inc.  
 LEWISTON, ME., 100 tons, American Electro Metal Corporation plant, to American Bridge Co.  
 NEW HAVEN, CONN., 1380 tons, power house extension for United Illuminating Co., to Levering & Garrigues Co.  
 BRIDGEPORT, CONN., 660 tons, manufacturing building for Crane Co., to American Bridge Co.  
 NEW YORK, 1600 tons, building for School of Education, New York University, at Fourth and Green Streets, to American Bridge Co.  
 NEW YORK, 1200 tons, school, to Easton Structural Steel Co.  
 NEW YORK, 550 tons, warehouse at Bailey Avenue and West 230th Street, to Kues Brothers.  
 NEW YORK, 525 tons, addition to St. Vincent's Hospital at Port Richmond, S. I., to Guilbert Steel Co.  
 NEW YORK, 200 tons, addition to office building at 71 Broadway, to American Bridge Co.  
 GREAT NECK, L. I., 240 tons junior beams, Wychwood apartment building, to Jones & Laughlin Steel Corporation.  
 TARRYTOWN, N. Y., 950 tons of steel and 500 tons of lally columns, Van Castle apartment building, to Muglers Iron Works.  
 ERIE RAILROAD, 140 tons, bridge at Depew, N. Y., to American Bridge Co.  
 PHILADELPHIA, 250 tons, building at West Philadelphia for General Electric Co., to Bethlehem Construction Co.  
 PHILADELPHIA, 825 tons, building for Rundle Mfg. Co., to McClintic-Marshall Co.  
 HAZLETON, PA., 250 tons, breaking plant for Lehigh Coal & Navigation Co., to Bethlehem Steel Co.  
 HERSHEY, PA., 225 tons junior beams, floors for Hershey community building, to Jones & Laughlin Steel Corporation.  
 WILLIAMSBURG, VA., 300 tons, building for College of William and Mary, to Richmond Structural Steel Co.  
 NORFOLK & WESTERN RAILWAY, 190 tons, bridge at Wharfedale, W. Va., to American Bridge Co.  
 OCEAN SPRINGS, MISS., 100 tons for Fort Bayou bridge, to Nashville Bridge Co.  
 TORONTO, ONT., 250 tons for University Club of Toronto, to John T. Hepburn, Ltd.  
 TORONTO, 250 tons, plant for Rogers Batteryless Radio Co., to John T. Hepburn, Ltd.  
 TORONTO, 150 tons, Miller Lithographing Co., Ltd., to Disher Steel Construction Co., Ltd.  
 WALKERVILLE, ONT., 100 tons, addition for Dominion Forge & Stamping Co., to Canadian Bridge Co.  
 ST. LAURENT, QUE., 200 tons, airplane factory for Curtiss-Reid Aircraft Co., to Canadian Vickers, Ltd.  
 TOLEDO, OHIO, 3000 tons, factory building for Libbey-Owens Co., to Rochester Bridge Co.

AKRON, OHIO, 1900 tons, building for Ohio Bell Telephone Co., to Berger Iron Works.  
 KOKOMO, IND., 1000 tons, building for Kokomo Steel & Wire Co., to Indiana Bridge Co.  
 LISLE, ILL., 550 tons, convent, to Midland Structural Steel Co.  
 CHICAGO, 1870 tons, addition to Illinois Bell Telephone Co. building, to American Bridge Co.  
 CHICAGO, 1050 tons, Farragut High School, to Duffin Iron Co., local.  
 CHICAGO, 3000 tons, merchant mill building for Inland Steel Co., to McClintic-Marshall Co.  
 CHICAGO, 1800 tons, Franklin Exchange Building for Illinois Bell Telephone Co., to American Bridge Co.  
 CHICAGO, 6000 tons, Damon Avenue bridge, to American Bridge Co.; previously reported to unnamed bidder.  
 CHICAGO, 155 tons, building for Meyercord Co., to American Bridge Co.  
 GRANITE CITY, ILL., 500 tons, mill building for Commonwealth Steel Co., to Mississippi Valley Structural Steel Co.  
 MISSOURI PACIFIC, 600 tons, bridges, to American Bridge Co.  
 ST. LOUIS, 600 tons, train shed, to Mississippi Valley Structural Steel Co.  
 ST. LOUIS, 150 tons, addition to Mercantile Trust Co. building, to Stupp Brothers Bridge & Iron Co.  
 SALINA, KAN., 100 tons junior beams, floors for United Life Insurance building, to Jones & Laughlin Steel Corporation.  
 SHELTON, WASH., 150 tons plates, boiler for Rainier Pulp & Paper Co., to Puget Sound Machinery Depot.  
 PITTSBURG, CAL., 200 tons, addition to rolling mill Columbia Steel Corporation, to McClintic-Marshall Co.  
 SAN FRANCISCO, 765 tons, apartment building, Clay and Jones Streets, to Judson-Pacific Co.  
 SAN FRANCISCO, 120 tons, hotel addition, O'Farrell and Taylor Streets, to McClintic-Marshall Co.  
 SAN FRANCISCO, 120 tons, apartment building, Vallejo and Octavia Streets, to McClintic-Marshall Co.  
 BERKELEY, CAL., 200 tons, apartment building, Arch Street and Hearst Avenue, to Golden Gate Iron Works.  
 LOS ANGELES, 250 tons, stage building, 5454 Marathon Avenue, to Consolidated Steel Corporation.

### Structural Projects Pending

Inquiries for fabricated steel work include the following:

BOSTON, 1000 tons, six barges for Island Creek Coal Co.  
 PROVIDENCE, R. I., 520 tons, Nurses Home and hospital addition.  
 AVON, CONN., 200 tons, bridge.  
 STATE OF VERMONT, 500 tons, highway bridges.  
 BOSTON & MAINE RAILROAD, 250 tons, three bridges on Fitchburg division.  
 NEW HAVEN, CONN., 445 tons, Raleigh-Fitkin Memorial Hospital.  
 NEW YORK, 2850 tons, building for New York Herald Tribune in West Forty-first Street; previously reported as 2000 tons.

NEW YORK, 1300 tons, Textile High School.  
 NEW YORK, 1050 tons, addition to museum at Fifth Avenue and 103rd Street.  
 BROOKLYN, 1300 tons, trade school for girls.  
 STATE OF NEW YORK, 315 tons, bridges at Whitehall and Maryland.  
 LEHIGH VALLEY RAILROAD, 250 tons, bridges at Cheektowaga, N. Y.  
 READING RAILROAD, 3000 tons, bridge at Muncy, Pa.  
 PHILADELPHIA, 2000 tons, Market Street subway under City Hall; bids opened April 2.  
 WHEELING, W. VA., 5400 tons, 37 river barges for Wheeling Steel Corporation.  
 MEMPHIS, TENN., 22,000 tons, 50 barges for Mississippi River Commission; bids opened April 8.  
 DUNDAS, ONT., 100 tons, high school.  
 VERDUN, QUE., 125 tons, Y. M. C. A. building.  
 BUFFALO, 500 tons, Martin apartment building.  
 CHICAGO, 3000 tons, buildings for Inland Steel Co.  
 CHICAGO, 800 tons, addition to plant of W. F. Hall Printing Co.  
 CHICAGO, 2100 tons, Marshall High School; Great Lake Construction Co., general contractor.  
 STATE OF MINNESOTA, 900 tons, highway bridges.  
 MILWAUKEE, 300 tons, transfer bridge for municipal car ferry terminal; bids close March 21.  
 ELLENSBURG, WASH., 1691 tons plates, siphon for Kittitas Division, Yakima project; bids opened.  
 ELLENSBURG, 257 tons, bridge across Yakima River, North Branch Canal, Yakima project; bids opened.  
 SEATTLE, 1505 tons, West Spokane Street bridge; General Construction Co., low bidder.

## Department of Commerce Will Not Change Policy

WASHINGTON, March 12.—At the first press conference he has held since becoming head of the Department of Commerce, Secretary R. P. Lamont yesterday said that he would endeavor to conduct the department without change of policy. He pointed out that the department had been under the control of President Hoover for nearly eight years and that his successor should move slowly in considering any changes and take ample time to study the situation.

Secretary Lamont said that he would confer with Postmaster General Walter F. Brown before naming the first assistant secretary of the Department of Commerce, a position previously occupied by Mr. Brown. Time also will be taken to name a successor to William P. McCracken, Assistant Secretary for Aeronautics, who, Secretary Lamont said, feels that he cannot much longer afford to devote his efforts to the public service and has asked to be relieved. The secretary said he hopes to be able to retain the services of Director Julius Klein of the Bureau of Foreign and Domestic Commerce, who is inspecting trade promotion offices in Europe.



## PERSONAL

GEORGE E. SCOTT has been elected president of the American Steel Foundries, Chicago, and of the General Steel Castings Corporation, Eddystone, Pa., succeeding R. P. LAMONT, who has been appointed Secretary of Commerce. Mr. Scott was born in St. Louis, where he began his business career with the Simmons Hardware Co. In 1901 he moved to Chicago, where he became vice-president of the Simplex Railway Appliance Co.,



G. E. SCOTT

which was later acquired by the American Steel Foundries. He was made vice-president of the American Steel Foundries in 1905. During the war he served as general manager of the American Red Cross, remaining with that organization until 1919. He then returned to his former position with the American Steel Foundries and was also elected to the executive committee. He is a director of the Harris Trust & Savings Bank, the H. Channon Co. and the Griffin Wheel Co., all of Chicago.

WILLIAM J. CRONIN, for the past nine years secretary for New York and New Jersey of the National Metal Trades Association, has been appointed secretary of the Tri-City Manufacturers Association, Davenport, Iowa, Moline and Rock Island, Ill., succeeding the late Harry A. Jensen.

LOUIS YAGER, assistant chief engineer of the Northern Pacific Railway Co., St. Paul, Minn., has been elected president of the American Railway Engineering Association. Other new officers of the association are: First vice-president, G. D. BROOKE, general manager Chesapeake & Ohio Railway Co.; second vice-president, L. W. BALDWIN, president Missouri Pacific Rail-

road Co. E. H. FRITCH of Chicago was reelected secretary, and F. J. SIMPSON was reelected treasurer.

LAURENCE MOUAT, sales manager of the P. & F. division, American Hardware Corporation, New Britain, Conn., has resigned.

FRANK D. TAYLOR, JR., secretary and sales director of the Peck, Stow & Wilcox Co., Southington, Conn., has resigned.

WILLIAM B. STOUT, president of the Stout Metal Airplane division, Ford Motor Co., Detroit, was the guest of the Pittsfield, Mass., chapter of the American Institute of Electrical Engineers on March 6. He spoke on the future of aviation, particularly as it relates to the metal and electrical industries.

MAXWELL A. COE, recently superintendent of the Stanley Rule & Level Co., subsidiary of the Stanley Works, New Britain, Conn., has been made manager. PHILIP B. STANLEY recently resigned as vice-president of the subsidiary, and Mr. Coe will take over a part of his work.

GEORGE A. RICHARDSON, manager technical publicity department, and R. L. MACDONALD, foundry specialist, Bethlehem Steel Co., Bethlehem, Pa., will be guests of the Pittsburgh Foundrymen's Association at its monthly meeting at the Fort Pitt Hotel, Pittsburgh, Monday evening, March 18. Mr. Richardson will give an illustrated talk on Mavari pig iron and Mr. MacDonald will lead the discussion.

A. H. BEALE, president A. M. Byers Co., Pittsburgh, has been elected a director of the Sharon Steel Hoop Co., Sharon, Pa., succeeding J. F. EYERS, who has resigned.

SIR ARTHUR BALFOUR, K. B. E., of the Dannemora Steel Works, Sheffield, England, was the guest at a luncheon on March 1, sponsored by the Merchants Association of New York and the American section of the International Chamber of Commerce. He is chairman of the British Committee on Industry and Trade and also head of the British National Committee of the International Chamber.

E. W. MCHENRY has been appointed district sales representative at Houston, Tex., for the Reading Iron Co., Reading, Pa.

ARTHUR J. TUSCANY, manager Gray Iron Institute, Cleveland, will speak at a meeting of the Newark Foundrymen's Association to be held at the Down Town Club, Newark, on

Friday, March 15, at 6 p. m. His subject will be "New Ways to Foundry Profits."

FRED L. A. SCHMIDT, for the last 12 years industrial power plant specialist in the Cleveland district office of the General Electric Co., has become associated with the power plant engineering staff of the H. K. Ferguson Co., Hanna Building, Cleveland.

O. D. CONOVER has resigned as foundry specialist of the Austin Co., Cleveland, and has become vice-president of the Foundry Equipment Co. of that city. He had been with the



O. D. CONOVER

Austin Co. for 10 years, during which time he was assistant chief engineer in addition to carrying on his work in connection with foundries. Previous to his affiliation with the Austin Co., Mr. Conover was chief engineer and vice-president of the T. W. Price Engineering Co., New York, production manager of the Ludlum Electric Furnace Corporation and chief engineer of the Bergen Point Iron Works, Bayonne, N. J.

ALBERT H. WECK has resigned as president and a director of Edward Weck & Son, Inc., Brooklyn, manufacturer of cutlery.

MRS. MARGARET MCCREAVY has been elected president of the Schuylkill Forge Co., Philadelphia, succeeding her husband, the late William T. McCreavy. A son, WILLIAM A. MCCREAVY, continues as vice-president and treasurer.

P. S. JONES, recently manager of the Pittsburgh offices of Cutler-Hammer, Inc., Milwaukee, maker of electric motor control apparatus, has been appointed manager of the company's New York district office, succeeding C. W. YERGER, who has become associated with the Hanson-Van Winkle-Munning Co., Matawan, N. J. T. S. TOWLE, who has been identified

with the Pittsburgh office in a sales engineering capacity, has succeeded Mr. Jones, as its manager. G. E. HUNT has been placed in charge of distributors' sales in the Cutler-Hammer organization. He has been located in the Philadelphia office for the last 10 years.

JAMES S. WATSON, for the last nine years general manager of the Dodge works, Link-Belt Co., Indianapolis, has been elected a vice-president of that company. He has been associated with the company for 34 years, having started at the Philadelphia plant. In 1904 he was placed in charge of the exploitation of the



J. S. WATSON

Link-Belt silent chain as a power transmission medium, and at Indianapolis in recent years he has been in full charge of the production of the company's silent and roller chain drives. In his new capacity he will continue to be in charge of the sale of these drives and also of herringbone speed reducers.

LESLIE H. DODD has been appointed district engineer in the field staff of the American Institute of Steel Construction, and will have headquarters at Dallas, Tex. He is a graduate of the University of Kansas and has been engaged in engineering and contracting work for a number of years. He is an associate member of the American Society of Civil Engineers. Mr. Dodd is the eleventh district engineer to be employed by the institute, working under the supervision of F. H. FRANKLAND, manager of technical service, with headquarters at New York.

HOWARD EVANS, for many years secretary of the Philadelphia Foundrymen's Association, has resigned, as has WILLIAM G. SUMMERS, the treasurer. The work of both offices has been taken over by E. S. SPARKS, secretary of the Metal Manufacturers' Association, whose address is 1623 Sansom Street, Philadelphia.

K. G. BAKER, recently associated with the Century Electric Co. and the Fulton Iron Works, both of St. Louis, has become identified with the Cincinnati sales organization of the Wagner Electric Corporation, St. Louis.

WILLIAM H. HULICK, JR., until recently in the sales department of the Warren Foundry & Pipe Co., 11 Broadway, New York, has joined the sales force of B. Nicoll & Co., 295 Madison Avenue, New York, as representative for the sale of completely inclosed garbage removal trucks to municipalities.

RAYMOND W. EGAN has been elected president of the Fay & Egan Co., Cincinnati, manufacturer of wood-working machinery. He has been general manager, and succeeds CLIFFORD P. EGAN, who has resigned.

E. W. PAGE of the Victor X-Ray Corporation, Chicago, spoke on "X-Ray as Applied to Industry" before the Cincinnati chapter of the American Society for Steel Treating on March 7.

DR. ALBERT SAUVEUR, professor of metallurgy, Harvard University, Cambridge, Mass., will be the principal speaker at a special meeting of the Dayton, Ohio, chapter of the American Society for Steel Treating on Monday, March 18.

JAMES B. THORPE has been made assistant to the president of the Climax Molybdenum Co., 61 Broadway, New York. Mr. Thorpe was graduated from the University of North Carolina with the degree of Bachelor of Science, majoring in chemistry and metallurgy. Since 1906 Mr. Thorpe has been associated almost entirely with the steel industry, being employed first by the Carnegie Steel Co. at its Clairton, Pa., works as chemist. In 1908 he became identified with the Illinois Steel Co. at Gary, Ind., where he served successively as chief chemist, metallurgical engineer and superintendent of the open-hearth department. In 1918 he became associated with the United Alloy Steel Corporation, Canton, Ohio, now part of the Central Alloy Steel Corporation, as assistant general superintendent of the steel plant; in 1922 he was made general superintendent. In January, 1925, he resigned from the United Alloy Steel Corporation, and he became associated with the Climax Molybdenum Co. about the middle of 1926.

P. P. PALMER has been appointed purchasing agent for Holmes Products, Inc., Bridgeport, Conn., maker of electric refrigerators.

T. J. CORNWELL has been elected president of the Peerless Foundry Co., Indianapolis. He has been with the company since 1907, and succeeds the late William G. Williams. FRANK

MUTZ has been named vice-president and treasurer, and C. I. CAREY, secretary.

L. DALE HAGENBOOK, plant engineer for the Ross Gear & Tool Co., Lafayette, Ind., has resigned to become assistant chief engineer of the Northwest Engineering Co., Green Bay, Wis., manufacturer of gas powered excavation machinery.

DANIEL C. EAGAN, formerly president of the Eagan-Rogers Steel & Iron Co., Crum Lynne, Pa., which later became the Eagan-Johnson Steel & Iron Co., has become associated with the Deemer Steel Casting Co.,



D. C. EAGAN

New Castle, Del., and will devote his time to both sales and the manufacture of carbon, manganese and alloy steel castings. He was graduated from Princeton University in 1906, and prior to his association with the Eagan-Rogers company, he served as secretary of the Shenango Machine Co., Sharon, Pa.; as treasurer of the General Castings Co., Pittsburgh, and as president of the Keystone Steel Castings Co., Chester, Pa.

R. A. CANNON, manager of castings sales for the Birdsboro Steel Foundry & Machine Co., Birdsboro, Pa., has been appointed a vice-president of the company.

ALFRED VICTOR DE FOREST, research engineer for the American Chain Co., Bridgeport, Conn., will give an illustrated lecture on "Testing and Research in a Steel Using Industry," at a meeting of the Western Society of Engineers, to be held at Chicago on March 18.

B. F. BAKER was elected president and treasurer of the Kewanee Boiler Corporation, Kewanee, Ill., at the annual meeting held recently in New York. He has been treasurer of the company since its inception in 1892, and succeeds the late E. E.



Baker. CLARENCE M. WOOLLEY, president of the American Radiator Co., New York, and ROLLAND J. HOLLAND, vice-president and secretary of the Radiator company, were elected to the board of directors. The Radiator company recently purchased the Kewanee organization.

## Winners of Apprenticeship Contests in Milwaukee

The sixth annual banquet, given by the Milwaukee branch of the National Metal Trades Association for apprentices in the last year of their contract and for prize winners in the various trade contests of the year was held Monday evening, Feb. 18, at the Milwaukee Vocational School. About 450 executives, officials and apprentices attended. Harold S. Falk, chairman of the Metal Trades apprenticeship committee in Milwaukee, presided. In his opening remarks he pointed out that, since the last annual banquet, the number of apprentices in the metal-trades shops had increased from 910 to 990, the largest increase in any year since 1923, and that the movement has grown from an experiment to a firmly established institution. Mr. Falk distributed awards to the winners of the various trade contests. Successful apprentices were as follows:

*Steel Molding:* Alex Stackowiak, Sivy Steel Casting Co.; Robert Engelbart, Bucyrus-Erie Co.; George Warnek, Sivy Steel Casting Co.

*Iron Molding:* John Vodnick, Allis-Chalmers Mfg. Co.; Elmer Faesch, Filer & Stowell Co.; Alex Witkowski, Harnischfeger Corporation.

*Machinists:* John Teshenech, Allis-Chalmers Mfg. Co.; Frank Morella, Kemp-smith Mfg. Co.; William Schottler, Allis-Chalmers Mfg. Co.

*Patterns:* Harry Smith, Milwaukee Pattern & Mfg. Co.; Arnold Behrens, Milwaukee Pattern & Mfg. Co.; Clarence Froelich, Allis-Chalmers Mfg. Co.

*Drafting:* Ray Pickel, Falk Corporation; Eugene Semrad, Filer & Stowell Co.; Carl Meyer, Allis-Chalmers Mfg. Co.

Since the 1929 drafting contest had also been completed, the winners were given awards as follows:

Albert Rohde, Falk Corporation; Kenneth Jacobson, Allis-Chalmers Mfg. Co.; Lawrence Heger, Allis-Chalmers Mfg. Co.

Following the distribution of awards, Mr. Falk introduced the speaker of the evening, Robert L. Cooley, director of vocational education in Milwaukee, and president of the American Vocational Association, who spoke on "Oiling the Social Machinery."

Four furnaces for the new power plant of the Pittsburgh Steel Co., Monessen, Pa., will be installed by George Naismith & Sons Co., Highland Building, Pittsburgh. The same firm will build a continuous producer gas fired furnace at the Cuyahoga works of the American Steel & Wire Co., Cleveland.

## OBITUARY

THEODORE F. MERSELES, president Johns-Manville Corporation, New York, died suddenly at a hotel in Del Monte, Cal., on March 6, aged 65 years. He was born at Jersey City and in 1893 became vice-president and general manager of the Western Wheel Works, which he built up into one of the leading manufacturers of bicycles in the country. In 1897 he was instrumental in the formation of the American Bicycle Co., which he served as vice-president for many years. In 1920 he became president of Montgomery Ward & Co., Chicago, and remained as head of that company during its recovery from post-war depression. He had been president of the Johns-Manville Corporation since 1927.

BENJAMIN ARROWSMITH HEGEMAN, JR., president National Railway Appliance Co., New York, died at his home in that city on March 6, aged 68 years. He was born in New York and gained his early business experience with the Delaware, Lackawanna & Western Railroad Co. Later he became Eastern sales agent for the American Car & Foundry Co., and in 1901 was elected president of the United States Metal & Mfg. Co. He was a former president of the American Railway Association and was a member of the American Electric Railway Association. At the time of his death he was also president of the Hegeman-Castle Corporation, Chicago, and of the Anglo-American Varnish Co., Newark, N. J.

EUGENE J. MCCARTHY, president of Beals, McCarthy & Rogers, Buffalo, iron and steel warehouse distributors, died at his home in that city on March 7. He had become associated with the firm in 1890 and had been its chief executive officer since 1917. In this capacity he had become one of the best known men in the warehouse field and was also active in other industrial enterprises in his native city.

ROBERT REED RICHARDSON, general manager Pittsburgh & Conneaut Dock Co., Conneaut, Ohio, subsidiary of the United States Steel Corporation, died on March 10 at Phoenix, Ariz., where he had gone on a vacation. He was 62 years of age and had been associated with the Steel Corporation and the Carnegie Steel Co. for about 40 years.

S. L. McCORMICK, long prominently identified with the steel industry, died suddenly at Detroit on March 11. He was formerly vice-president and works manager of the American Tube & Stamping Co., Bridgeport, Conn., having left that company about six months ago to take charge of the erection of hot and cold strip mills at Ecorse, Mich., for the Michigan

Steel Corporation. Previously he had been connected with the Trumbull Steel Co., Warren, Ohio, and the Weirton Steel Co., Weirton, W. Va.

JOHN F. WILSON, for 53 years an employee of the subsidiaries of the United States Steel Corporation and their predecessors, died on March 11, following a brief illness. He was born at Candia, N. H., in 1846, and when a young man went to Joliet, Ill., where he entered the service of the Illinois Steel Co. In 1900 he was transferred to the South Chicago works as auditor. He had retired in July, 1928, but had been retained as a consultant.

ALEXANDER ADAMSON, founder and president of the Adamson Machine Co., Akron, Ohio, died on March 3.

A. LEWIS JENKINS, head of the mechanical engineering department, College of Engineering and Commerce, University of Cincinnati, died March 9, following a prolonged illness, aged 47 years. He was known throughout the United States and Europe for his research on machine tools and on the designing of heavy machinery. His work on the analysis of combined stresses and their application to the practical design of machine tools, hydraulic presses, and punching and shearing machines is widely quoted in text books and in engineering literature.

CHARLES T. MULLEN, who had retired as president of the Mount Vernon Furnace & Mfg. Co., Belleville, Ill., about six months ago, died in that city on March 7, aged 68 years. He was head of the Mount Vernon company for eight years, and previously was secretary-treasurer of Belleville Stove Works and an official of the Quality Stove & Range Co., Belleville.

## Heavier Shipments of Sheet Metal Ware

WASHINGTON, March 12.—January shipments of enameled sheet-metal ware were 426,877 dozens, valued at \$1,414,638, compared with 324,445 dozens, valued at \$1,104,060 in December and 319,871 dozens, valued at \$1,093,329, in January of last year, according to reports received by the Department of Commerce from 18 manufacturers, comprising approximately 80 per cent of the industry.

Shipments in January were the heaviest since last March, when 442,689 dozens were sent out. With the further exception of March, 1927, when 440,689 dozens were shipped, the January total was the largest since the first of these reports was issued—that for January, 1927.

# British Mill Operations Increasing

Demand Improves with Break in Severe Weather—Tin Plate Makers Adopt Quotas of Output—Germans Plan Steel Export Cartel

(By Cable)

LONDON, ENGLAND, March 11.

**I**MPROVEMENT in the coal situation is maintained, demand increasing and more mines reopening, but increase in output is slow. Pig iron demand is steadily increasing, with buyers showing more willingness to contract ahead. Very little pig iron, especially hematite, is available for prompt delivery. Cleveland pig iron prices are unchanged, but hematite producers are asking increased prices.

Ore and fuel are firmer, with best Rubio ore sold at 23s. (\$5.58) per ton, c.i.f. Tees, and coke at 18s. 9d. to 19s. (\$4.54 to \$4.60) per ton, delivered works.

Finished steel demand has improved with the end of severe weather and shipyards are resuming activity. Heavy steel mills are generally well booked with domestic and export orders. The steel makers' export committee is negotiating for some good export orders, but details have not yet been disclosed. The Sheffield steel trade is improving slowly, but is still rather depressed.

Continental steel markets are quiet and buyers here are disinterested as prices are too high and deliveries too long delayed. Antwerp navigation is now reported normal, but there is still congestion on the Belgian and German railroads and canals and the Rhine River is still partly blocked with ice.

The International Steel Cartel meets in Brussels, Belgium, on Wednesday to discuss the second quarter allotments and the German export quota. The International Tube Cartel will meet in London, April 11, when it is expected that signatures will be placed on the American and British agreements. Recently, engineers from the Acieries Reunies de Burbach-Eich-Dudelange are reported to have gone to Asia Minor with a view to erecting an iron and steel plant there. The Russian Government reports that a new blast furnace and some open-hearth furnaces are being erected in the Ural district and are expected to be in operation by the end of this year. The capacity of the new steel plant will be 100,000 to 110,000 tons a year.

The plan of the Welsh tin plate mills for regulation of output under a system of quotas has been practically adopted by more than 80 per cent of the mills and is operative from Feb. 25. The proposed penalty

for over production and bonus for under production is 2s. (48c.) per base box. The maximum allocation to all mills for the first month probably will be one-twelfth the production in the year ended November, 1928, less 5 per cent.

Inquiry for tin plate is improving and makers expect some good business to develop. British production of tin, terne and black plates last year is officially given as 864,700 tons, which differs from the sum of the monthly totals for the year. This is explained by the fact that certain months' production figures have been revised and exact monthly adjustments were impossible.

Galvanized sheets are quiet and prices inclined to softness. The Japanese demand for black sheets is light, but South American markets are more active.

Sir W. G. Armstrong, Whitworth & Co. have booked an order for 20 heavy locomotives for the Central Argentine Railway.

## German Export Syndicate Proposed

Plan Abandoned When International Cartel Was Formed Is Revived—Would Provide for Foreign Offices

BREMEN, GERMANY, Feb. 23.—German steel producers are considering the possibility of establishing an export syndicate for steel products. At

present certain products, such as wire rods, hoops and tubes, are being sold for export through associations and syndicates, but sales of most

British and Continental European prices per gross ton, except where otherwise stated, f.o.b. makers' works with American equivalent figured at \$4.85 per £ as follows:

Durham coke, del'd....	£0 18½s. to £0 19s.	\$4.48 to \$4.60
Bilbao Rubio ore*.....	1 3	6.18
Cleveland No. 1 foundry	3 9½	16.85
Cleveland No. 3 foundry	3 7	16.25
Cleveland No. 4 foundry	3 6	16.00
Cleveland No. 4 forge..	3 5½	15.88
Cleveland basic (nom.)	3 5	15.76
East Coast mixed.....	3 13½	17.82
East Coast hematite....	3 14	17.94
Rails, 60 lb. and up....	7 15 to 8 5	37.59 to 40.01
Billets .....	6 5 to 7 0	30.31 to 33.95
Ferromanganese .....	13 15	66.69
Ferromanganese (export)	13 10 to 14 0	65.47 to 67.90
Sheet and tin plate bars, Welsh .....	5 2½	25.82
Tin plate, base box....	0 18 to 0 18¼	4.37 to 4.43
Black sheets, Japanese specifications .....	13 7½	64.87
C. per Lb.		
Ship plates .....	7 12½ to 8 2½	1.66 to 1.76
Boiler plates .....	9 0 to 10 10	1.95 to 2.27
Tees .....	8 2½ to 8 12½	1.76 to 1.86
Channels .....	7 7½ to 7 17½	1.60 to 1.71
Beams .....	7 2½ to 7 12½	1.55 to 1.65
Round bars, ¾ to 3 in.	7 15 to 8 5	1.67 to 1.78
Steel hoops .....	9 0 to 10 0	1.95 to 2.16
Black sheets, 24 gage..	10 0	2.16
Galv. sheets, 24 gage..	13 10	2.92
Cold rolled steel strip, 20 gage (nom.).....	12 0	2.64

\*Ex-ship, Tees, nominal.  
(a) Nominal.

## Continental Prices All F.O.B. Channel Ports

(Per Metric Ton)

Foundry pig iron (a):			
Belgium .....	£3 6s. to £3 10s.	\$16.00 to \$16.97	
France .....	3 6 to 3 10	16.00 to 16.97	
Luxemburg .....	3 6 to 3 10	16.00 to 16.97	
Basic pig iron (a):			
Belgium .....	3 6	16.00	
France .....	3 6	16.00	
Luxemburg .....	3 6	16.00	
Coke .....	0 18	4.37	
Billets:			
Belgium .....	5 4½	25.34	
France .....	5 4½	25.34	
Merchant bars:			
Belgium .....	6 3 to 6 5	1.34 to 1.36	
France .....	6 3 to 6 5	1.34 to 1.36	
Luxemburg .....	6 3 to 6 5	1.34 to 1.36	
Joists (beams):			
Belgium .....	5 3 to 5 4	1.13 to 1.14	
France .....	5 3 to 5 4	1.13 to 1.14	
Luxemburg .....	5 3 to 5 4	1.13 to 1.14	
Angles:			
Belgium .....	6 0 to 6 2	1.31 to 1.32	
½-in. plate:			
Belgium (a).....	6 11	1.43	
Germany (a).....	6 11	1.43	
¾-in. ship plate:			
Belgium .....	6 5½	1.37	
Luxemburg .....	6 5½	1.37	
Sheets, heavy:			
Belgium .....	6 1	1.31	
Germany .....	6 1	1.31	



products are made directly by the export subsidiaries of the makers. For example, all export business of the Vereinigte Stahlwerke A. G., Düsseldorf, is handled through its export subsidiary, the Stahlunion G.m.b.H., which deals with merchants and importers in overseas countries, except in the case of the United States, where it maintains a direct sales office in New York.

The plan now being discussed was proposed just prior to formation of the International Steel Cartel, but was abandoned by German producers at that time, in the belief that export control of steel sales on an international scale would be possible through

the cartel. German efforts to have the cartel establish an international selling agency have been unsuccessful and so the proposal has been brought up again among German mills. Under the plan, a steel export company, handling most finished steel products, would have distributors in various foreign markets, selling through merchants only in countries where the demand is insufficient to warrant the expense of an office. There seems considerable probability that such an organization will be established, and the fact that it is being discussed in Germany is expected to exercise a decisive influence at the next meeting of the International Steel Cartel.

## German Iron and Steel Business Better

### Severe Domestic Depression Not Expected This Year— Rolling Mills Booked Three Months Ahead

BERLIN, GERMANY, Feb. 25.—Domestic business in iron and steel has begun to show improvement, and a serious trade depression is not expected to develop this year. While the latest labor union report shows 19.4 per cent unemployed compared with 11.4 per cent a year ago, the present high figure is caused largely by a seasonal lull in certain industries, such as the building trades, where the unemployment percentage is 58.4. Unemployment in the iron and steel industry is only 9.5 per cent. Abnormally cold weather has retarded building construction, and certain mills rolling rails and steel ties report only about 25 per cent operation.

Heavy importation of raw materials in January indicates that producers here expect good business this spring. For all of 1928, the import surplus, with reparations shipments included in the export total, was only 1,199,000,000 m. (\$284,163,000) compared with 2,848,000,000 m. (\$674,976,000) in 1927. Export trade is affected by uncertainty as to the result of the meeting of the International Steel Cartel, at which Germany may announce withdrawal.

Rolling mills have orders on their books for the next two or three months. Although there has been some curtailment of demand, it is not confined to Germany, but is reported in all Continental markets, and is not regarded as serious. In part, the present lack of activity in many products is the result of long deliveries asked by the mills, particularly in Belgium, and the unwillingness of buyers to contract so far ahead. Export prices are somewhat irregular. Pig iron is firm, but bar prices have declined from a peak in January of £6 6s. per ton (1.38c. per lb.) to £6 2s. 6d. per ton (1.35c. per lb.) f.o.b. Antwerp. The sheet market shows a tendency toward weakness because of lack of demand from the building trades, which have been hampered by the unusually severe weather. The

export price for billets, f.o.b. Hamburg, has advanced 3s. (73c.) per ton in the past month.

The locomotive industry is still depressed. Exports of locomotives, including tenders, declined in 1928 to 17,093 tons, compared with 24,598 tons in 1927. Exports of locomotives in 1913 totaled 54,455 tons. The industry is urging the Railroads Corporation to contract for 100 locomotives at once, this being the smallest order that will keep the industry from facing bankruptcy this year.

Shipbuilding is also quiet, and the Reichstag is considering granting further credits to the Schickau Shipyard Co., which is in financial difficulties. Ship construction orders on hand Jan. 1 totaled only 402,261 gross tons, compared with 524,991 tons a year ago. Foreign contracts represent a larger proportion of this tonnage than the year before, totaling 156,270 tons compared with 131,670 tons at the beginning of 1928.

The machine tool industry has almost reached the pre-war level of exports, with a total in 1928 of 88,159 metric tons, compared with 90,279 metric tons in 1913. The past few years have shown a steady increase in machine tool exports.

### Lower Freight Rates from Antwerp to Far East

HAMBURG, GERMANY, Feb. 23.—Six ships have been chartered by the shipping and forwarding firm of De Leeuw & Philipsen, Antwerp, for a regular monthly service between Antwerp and Far Eastern ports. The company is not a member of the steamship conference and has announced a freight rate on steel of 30s. (\$7.28) per gross ton, compared with the conference rate of 37s. 6d. (\$9.07) per ton, and 35s. (\$8.47) per ton, quoted by one non-member of the steamship conference. It is consequently expected that the rates of all lines to the

Far East will be brought down to the new level, and exporters are already quoting on the basis of the expected reduction. Wire rods have been offered at £7 17s. 6d. (\$38.18) per ton and steel bars at £6 16s. 3d. per ton (1.50c. per lb.), c.i.f. Shanghai.

### Germany Seeks Quota Credit for Loss in Steel Lockout

WASHINGTON, March 12.—The German steel industry, according to a report from the assistant commercial attaché in Paris, has asked the International Steel Cartel to consider the lockout of last November as a case of "force majeure" and, therefore, to add a tonnage of more than 10 per cent to the German quota for the first quarter of 1929 by way of compensation for losses suffered in that period. Germany has also requested an increase in the present export quota of 300,000 tons a month by reason of the decline in its export tonnage last December. The other members of the cartel have agreed to a 5 per cent increase, 15,000 tons, to be spread over the entire first quarter of the current year.

German claims will be considered more fully when the fines are fixed for the last quarter of 1928, and it is also probable, the report says, that they will be discussed further at the Brussels meeting of the cartel on March 14. According to current French comment, it is possible that continued firmness of the steel market may influence the decision of the other members of the steel pact, and that an increase in excess of the original 5 per cent concession may be granted.

### European Rail Association Faces Dissension

BERLIN, GERMANY, Feb. 25.—While a complete and permanent disruption of the European Rail Makers' Association at the March meeting in Paris is unlikely, some Continental rail interests, which are opposed to the present British demands for a larger quota, urge that the cartel be dissolved to bring pressure upon the British mills, after which the cartel could be renewed on terms satisfactory to the Continental makers.

Another factor in negotiations for renewal of the cartel is the German demand that none of the reparations deliveries be counted as part of the German quota. At present a certain percentage of such shipments is applied to the quota. In this connection, consideration must be given to the claim of Czechoslovakia that German competition in the Near East is already too great and that it would become still sharper with the removal of reparations deliveries from the German quota. The demands of all members have been formulated and it may be necessary to prolong the meeting to reach a settlement.

# Russian Steel Output Increasing

## Still Insufficient for Requirements—Extensive Development Planned at Dnieper River Hydroelectric Plant

MOSCOW, RUSSIA, Feb. 18.—There continues to be a shortage of heavy steel products, and the Commissariat for Communications states that construction on two ships has been retarded because of an inadequate supply of steel plates. Pig iron output increased in the first quarter of the present business year, Oct. 1 to Jan. 1, totaling 880,100 metric tons, compared with an average quarterly production in the preceding year of 820,000 tons. The production program for this year provides for a total of 3,884,000 metric tons, or 971,000 tons a quarter. Steel ingot output in the first quarter of the current business year also showed a slight increase, totaling 1,147,000 tons, compared with a quarterly average for the preceding year of 1,036,000 tons. Pig iron production in South Russia has been restricted of late by a shortage of iron ore, and coal output is less than specified in the program for the year.

Extensive development programs are being planned, with the "Gipro-miess" maintaining about 1400 engineers and draftsmen working on plans. The current budget provides for a capital investment in industry of 949,209,000 rubles, compared with an investment of 632,138,000 rubles in the business year 1927-1928. For electrification development an expenditure of 184,000,000 rubles has been authorized, compared with 135,660,000 rubles in the preceding year. Plans for the next five years call for an estimated total outlay on metallurgical plants of 2,068,000,000 rubles, of which 792,000,000 rubles will be for new plants and the remainder for reconstruction and improvement of existing works. At the end of the five-year period a total output of 10,000,000 tons of pig iron a year is planned, of which 62 per cent will be from Southern furnaces and 24 per cent from producers in the Ural Mountains. In this connection it is planned to erect 30 blast furnaces.

Proposed construction in the coming five-year period is officially grouped in three classes. The first, for which plans are completed, includes such works as the Magnitogorsk, with an annual output of 600,000 tons of pig iron; the Telbessk, with 400,000 tons annually; the Kri-voirog, with 200,000 tons annually, and Petrovsk in the East, with 314,000 tons annually. The second group includes plants for which plans are not yet completed, but for which sites have been selected. The third group embraces works to be built in districts where local conditions are still to be investigated and sites selected. At Tchopersk, on the lower Volga River, new deposits of iron ore estimated at 24,000,000 tons have been discovered. A proposal has been made, but not yet sanctioned, to erect a blast furnace

on this site with an annual capacity of 325,000 tons.

At the Dnieprstroi hydroelectric development, now under construction, 400,000,000 to 450,000,000 rubles is to be expended on metallurgical and chemical plants, and the Supreme Council of Economy has recommended that a proposed aluminum plant should be erected near the Dnieprstroi development instead of at Leningrad near the bauxite deposits, as originally proposed. Production of ferromanganese, either in the Caucasus or at the Dnieprstroi development, is also being discussed. The proposal to concentrate so many new plants near this great hydroelectric development is based on the belief that the power generated when the project is completed will be in excess of the requirements of the existing plants and the peasants in that district.

## Krupp Works and Tube Cartel May Make Agreement

BERLIN, GERMANY, Feb. 25.—Although Friedrich Krupp A. G., Essen, which is building a new tube mill at Borbeck-Essen at a cost of 20,000,000 m. (\$4,740,000), is not a member of the German Tube Syndicate, it will enter into an agreement with the association to forestall severe competition. In the past, the tube syndicate has been able to buy control of outsiders threatening to become serious competitors. The Vereinigte Stahlwerke A. G., Düsseldorf, controls 50.9 per cent of the total quota of the syndicate; the Mannesmann Rohrenwerke in Westphalia, 17 per cent; the Press und Walzwerk A. G., Düsseldorf-Reisholz, 6.4 per cent, the Hahnische Werke, Düsseldorf, 6.1 per cent, and smaller producers the remainder.

## German Reparations in Kind Called Menace

BORDEAUX, FRANCE, Feb. 26.—In a recent address President Dalbouse of the Syndicate des Industries Mecaniques Francaises pronounced German reparations shipments and imports of American machinery as menaces to French industry. In an editorial comment on the speech *La Metallurgie* points out that these importations are of little importance while business conditions are good, but they are continuing to grow and will prove dangerous when trade slackens. French industry has no desire to stop reparations payments in goods, particularly in view of its position as tax payer, but it protests against having its markets flooded with products similar to the French, but of German origin. The editorial then quotes M. Dalbouse as saying: "Tomorrow the South

American, embarking for Europe by a French line, will travel on a ship built in Germany; disembarking at Bordeaux he will see the port equipped with German material; he will telephone to Paris on German apparatus and by wire made in Germany; he will enter a German railroad car on a railroad electrified by Germany and, if he visits a French manufacturing plant, the machine tools will be of German origin."

In the opinion of this publication the reparations materials received from Germany should be resold by France to other countries, and a strong campaign of propaganda should be instituted in favor of French products.

It is pointed out that the reason American machine tools are continually imported into France is because American makers are the sole producers of many tools and have been entrenched in the French market, maintaining their position partly on account of the inexperience and poor methods of production in France.

## Steel Importers Inactive—Export Trade Small

NEW YORK, March 12.—Sales of imported structural shapes are limited to small lots disposed of on arrival. Current quotations range from 1.80c. to 1.90c. per lb., New York, with importers able to buy direct from the mills at 1.70c. to 1.75c. per lb., duty paid, New York. Prices of imported steel bars are too high in most cases to permit of much business, quotations ranging from 2c. to 2.10c. per lb., duty paid. Some small business has been done in hoops and bands, on which importers have quoted \$8 to \$9 per ton less than American mill prices, but most consumers willing to buy foreign material only want small tonnages and deliveries from Continental mills range from two to four months as against two to three weeks from domestic makers. A slight gain in the volume of inquiry for imported steel products is reported and, with spring approaching, an increase in buying is expected by most importers.

Export trade continues quiet, except for sales of small tonnages of plain and barbed wire to South American markets, some merchant tin plate to Japanese importers and an occasional order from China for wire shorts, plate cuttings or bar crops. Despite low prices quoted by American mills on structural shapes for Far Eastern delivery—recently as low as 2.35c. per lb., c.i.f. Japan—little business has been taken. The Chinese market for galvanized wire shorts has improved, following a period of quiet during which American wire producers exhibited no interest in low Chinese offers for this material. Some business has been transacted at about \$47 per ton, c.i.f. Shanghai, China. By far the largest item in recent exports of the United States to Japan has been steel scrap, more than 15,000 tons having been shipped in January.



# Machinery Markets and News of the Works

## Buying Continues to Gain

Machine Tool Orders Double Those of Same Period Last Year and Compare With Volume in War

**M**ACHINE tool buying continues at a high rate, being affected only to a slight degree by the inability of many companies to make the deliveries their customers desire. Several large machine tool makers report that orders received so far this year are double those of the corresponding period last year, while a few have put on their books a volume of business that compares favorably with that done in the peak months of the war period.

While orders are coming from widely distributed lines of industry, the automobile and automobile parts manufacturers still take the lead. The Kissel Motor Car Co., Clintonville, Wis., is buying tools for an expansion program which will provide for the manufacture of taxicabs. The International Motor Co. has bought a number of tools for its plant at New Brunswick, N. J.

The farm implement and tractor industry is also a steady buyer of shop

equipment, one order from a tractor builder totaling about \$50,000.

Production in nearly all machine tool plants has been stepped up to the limit of available man-power. Some of the smaller shops which have not shared to the fullest extent in the good business of the past several months are feeling the stimulating effects of the overflow from the larger companies, many of which cannot make deliveries of certain types and sizes until May or June. Sales in some instances have been made for July shipment.

A Cleveland manufacturer of turret lathes has sold 20 machines for shipment to Soviet Russia.

Large inquiries for cranes feature the heavy equipment market. The National Tube Co. and the Carnegie Steel Co. are inquiring for 40, most of which are for plant enlargements of the former company at McKeesport and Lorain. The Chesapeake & Ohio is taking bids on 21 cranes.

## New York

**N**EW YORK, March 12.—Machine tool buying has continued without abatement, and inquiries are also keeping up at a high rate. Nothing has occurred to mar the outlook for an exceptionally good sales record this month for nearly all sellers. In the past week the International Motor Co. has bought several machines for its plant at New Brunswick, N. J. The Chile Copper Co. has bought a few machines for shipment to South America. Sales of single machines have been numerous. The General Electric Co. is expected to send out orders this week for the bulk of the list of about 75 tools recently inquired for.

Eagle Bronze Works, Inc., 10 North Bleeker Street, Mount Vernon, N. Y., will soon take bids on general contract for addition to cost about \$45,000, including improvements in present plant. G. M. Bartlett, 103 Park Avenue, New York, is architect.

Springsteen & Goldhammer, 40 East Forty-ninth Street, New York, architects, have plans for six-story automobile service, repair and garage building, to cost over \$500,000 with equipment.

Robert Bosch Magneto Service Co., 990 Atlantic Avenue, Brooklyn, has leased a building on Hulst Avenue, near Queens Boulevard, Long Island City, for a new service and repair works.

Kay Mfg. Co., 22 Warren Street, Brooklyn, manufacturer of metal springs and accessories for furniture, with branch plant at Chelsea, Mass., has completed plans for consolidation with Nachman-Springfield Co., 2241 South Halsted Street, Chicago, manufacturer of kindred specialties. Present plants will be continued and expansion carried out, including spring production for aircraft industry.

Metal Hose & Tubing Co., 253 Tillary Street, Brooklyn, has plans for one-story top addition to factory and improvements in present plant, to cost about \$65,000 with equipment. Albert Ullrich, 373 Fulton Street, is architect.

New York Air Terminals, Inc., care Richard F. Hoyt, Hayden, Stone & Co., 25 Broad Street, New York, investment securities, recently formed by Mr. Hoyt and associates, has purchased 743 acre tract on Hackensack meadows, Secaucus, N. J., with option on 165 acres adjoining, and plans construction of airport, including hangars, machine and repair shops, oil storage and distributing buildings, automobile service and repair shops, garages and other units, to cost about \$3,000,000. Mr. Hoyt will be chairman of board of new organization. Others interested include Clement M. Keys, head of Curtiss Aeroplane & Motor Co., Buffalo; and Charles S. Jones, president, Curtiss Flying Service, Garden City, L. I.

Paramount Brick Works, Inc., 724 Clinton Street, Brooklyn, manufacturer of sand-lime brick, has purchased property on Zerega Avenue, Bronx, New York, for new plant, to cost more than \$75,000 with machinery.

New York Power & Light Corporation, Albany, is reported planning hydro-electric generating plant at Palmer Falls, Palmer, N. Y., to cost more than \$2,000,000 with transmission system.

Farber & Kalkin, 1746 Pitkin Avenue, Brooklyn, architects, have plans for a multi-story automobile service, repair and garage building, to cost \$100,000 with equipment.

Graham B. Grosvenor, president Fairchild Aviation Corporation, 270 West Thirty-eighth Street, New York, and associates, have organized Aviation Corporation of America, Inc., with capital of \$200,000,000, to take over and consolidate at least six aircraft manufacturing and transportation companies, names temporarily withheld, and will develop main units and subsidiary interests for complete aircraft production, including planes, engines and accessories. Mr. Grosvenor will resign from Fairchild company to head new organization: R. Stanley Dollar of Dollar Steamship Line, 25 Broadway, New York, is also interested in company.

Polymet Mfg. Corporation, 599 Broadway, New York, manufacturer of radio equipment, is said to have purchased Strand & Sweet Co., Winsted, Conn., manufacturer of enameled wire, etc., and will operate as division. Purchasing company will carry out expansion, including addition to plant at Easton, Pa., and lease of space at 829 East 134th Street, New York, totalling 35,000 sq. ft. floor space, for establishment of new metropolitan works.

National Aero Corporation has been organized with capital of \$150,000 and 600,000 shares common stock, no par value, to take over and expand company of same name, with headquarters at 100 East Forty-second Street, New York, and plant at Perth Amboy, N. J., manufacturing an air-cooled aircraft motor. Work is under way on two one-story units at Perth Amboy. New company will also take over and operate Murray & Tregurtha, Atlantic, Mass., manufacturer of marine engines.

Sheet Metal & Roof Craftsman, Inc., Avon, N. J., care of Warren H. Conover, 114 Liberty Street, New York, architect, has asked bids on general contract for two-story plant to cost about \$45,000 with equipment. Harry C. Clayton, Sea Girt, N. J., is secretary.

Northern Mfg. Co., 371 Ogden Street, Newark, manufacturer of radio equipment, tubes, etc., has purchased adjoining property, and is said to be planning erection of addition, to cost more than \$40,000 with equipment.

Board of Education, Dunellen, N. J., is said to be planning installation of manual training equipment in new three-story junior high school, to cost \$200,000, for which plans have been drawn by A. M. Korff, 203 Park Avenue, Plainfield, N. J., architect.

William H. Muller & Co. and Iron & Ore Corporation of America, a subsidiary, handling sales of iron and manganese ore in United States, have removed from 11 Broadway to Chanin Building, 122 East Forty-second Street, New York.

## New England

**B**OSTON, March 11.—Although sellers of new tools are handicapped by extended dates on which deliveries can be made, some improvement in business was noted the past week. Sales included a universal boring machine, a large planer, milling, grinding and drilling equipment, and lathes.

Used tool dealers are receiving numerous inquiries from shops and dealers along the Atlantic Coast and in the Middle West. Instances are cited where used tool dealers worked nights the past week to get machinery out on schedule, a condition that has not existed in several years. Because of the continued scarcity of good tools of certain types, current business is not large. The largest individual sale reported the past week was for eight tools to a northern New England shop, including a Hendey shaper, two good sized upright drills and a No. 2 Kempsmith milling machine.

New England textile machinery manufacturers are busier than they have been in many months. Two Massachusetts plants are operating night shifts.

Practically all machinery makers in New England, including hoisting and mining equipment, are operating to capacity. The Mead-Morrison Mfg. Co., East Boston, during February took close to \$1,000,000 of new business. Package machinery makers are operating 51 hr. a week, and expect to be on overtime before the close of the second quarter.

Gamewell Co., manufacturer of fire alarm and police signal systems, has acquired outstanding stock of Holtzer-Cabot Electric Co., Boston, maker of fractional horsepower motors, hospital call systems, etc. No change in operating schedule and personnel of purchased company is anticipated.

New England Butt Co., Providence, special production machinery, is working at about 75 per cent of capacity, and expects to increase operations.

Heppenstall Forge Co., 95 Howard Avenue, Bridgeport, Conn., is closing final construction plans on its new machine shop. Orders for mechanical equipment have not yet been closed.

United Shoe Machinery Corporation, 205 Lincoln Street, Boston, will soon start work on a new eight-story and base-

## The Crane Market

**I**NQUIRY for electric overhead cranes is increasing, with a considerable volume of buying in prospect for the first half of the year. Four current lists of overhead equipment call for a total of 96 cranes, the largest of these specifying 21 overhead cranes of 10-, 15- and 20-ton capacity for the Chesapeake & Ohio Railroad.

In the Pittsburgh district, the National Tube Co. and the Carnegie Steel Co. are taking prices on a total of 40 cranes of various capacities. The inquiry of the former is notably large, embracing the cranes that will be wanted in the rebuilding of its National works, McKeesport, Pa., as well as a number for its Lorain works.

Other lists expected to be closed in the next week or 10 days, are 14 overhead cranes for the new Eddystone, Pa., plant of the General Steel Castings Co., inquired for by the Baldwin Locomotive Works, six 5- and 10-ton cranes for the Chase Brass & Copper Co., Waterbury, Conn., and five 12½-ton cranes for the Nichols Copper Co., Laurel Hill, L. I. Prospective business for this spring includes 20 or more overhead cranes and considerable monorail equipment for the 207th Street yards of the new subway, bids on which will probably be requested in about three weeks by the Board of Transportation, New York. Locomotive crane business is still limited to a moderate volume of inquiry for single pieces of equipment.

Among recent purchases are: Driver-Harris Co., Harrison, N. J., 10-ton electric overhead crane from Whiting Corporation.

Levering & Garrigues, New York, 25-ton overhead crane, reported purchased from Milwaukee Electric Crane & Hoist Corporation.

Rodgers & Hagerty, Inc., New York, five 15-ton, 40-ft. boom, crawl-tread cranes with two shovel attachments from the Ohio Power Shovel Co.

Clifford Jacobs Forging Co., Champaign, Ill., 10-ton, 80-ft. span overhead electric crane from Whiting Corporation.

Byllesby Engineering & Management Corporation, Duquesne, Pa., 150-ton, 75-ft. overhead electric power-house crane from Cleveland Crane & Engineering Co.

Zieber Steel Co., Chicago, 10-ton, double-hook overhead crane from the Northern Engineering Co.

ment warehouse at South Boston, 125 x 150 ft., for which portable handling equipment is required. French & Hubbard, 210 South Street, Boston, are engineers.

Plant of Hillsdale Plow Co., Hillsdale, N. Y., is being rebuilt at a cost of about \$120,000, and is expected to be ready for operation before the end of the month. A new foundry with pouring floor space, 80 x 275 ft., is under construction.

Plans have been authorized by Bridgeport Brass Co., Housatonic Avenue, Bridgeport, Conn., for one-story addition, 75 x 200 ft., to cost over \$65,000 with equipment. Fletcher-Thompson, Inc., 542 Fairfield Avenue, is architect and engineer.

General Plate Co., Forest Street, Attleboro, Mass., manufacturer of jewelers'

wire, tubing, etc., has asked bids on general contract for one-story addition, 50 x 74 ft., with extension, 40 x 50 ft., to cost about \$50,000 with equipment. Charles T. Main, 201 Devonshire Street, Boston, is architect and engineer.

Edison Electric Illuminating Co., 39 Boylston Street, Boston, is arranging for sale of 1000 shares of capital stock, considerable part of proceeds to be used for extensions in steam-operated electric generating plant, including additional equipment. Company is completing plans for new power plant at Everett, Mass., where tract of 39 acres recently was acquired.

Bullard Co., Bridgeport, Conn., has awarded general contract to Hewlett Co., 886 Main Street, for one-story addition at Fairfield, 50 x 75 ft. Fletcher-Thompson, Inc., 542 Fairfield Avenue, is architect and engineer.

Ceco Mfg. Co., Providence, manufacturer of radio tubes and equipment, has awarded general contract to E. H. Bigney, 49 Weybosset Street, for one-story addition, 40 x 56 ft., reported to cost about \$35,000 with equipment.

Morse-Coburn Steel Co., Lawrence, Mass., recently organized by Raymond G. Coburn and Frank Y. Morse, both of Lowell, Mass., has taken over part of former No. 5 textile mill of Appleton Mfg. Co., Lawrence, and will remodel for storage and distributing plant. Fred L. Winkley, Andover, Mass., is interested in new company.

Steubing Cowan Co., Cincinnati, with plants at Cincinnati and Holyoke, Mass., builder of industrial trucks and skids, has enlarged Holyoke plant to triple previous capacity. Considerable new equipment has been added.

Orrin Screw Co., formerly at Jackson, Mich., has been reorganized as Stockbridge Screw Co. by Gorham C. Parker, formerly associated with Jacobs Mfg. Co., Hartford, Conn., who will be secretary and manager. Company is now located at Stockbridge, Mass.

## Philadelphia

**P**HILADELPHIA, March 11.—In connection with general expansion and improvement program to cost about \$30,000,000, Philadelphia & Reading Coal & Iron Co., Philadelphia, plans construction of group of centralized electric-operated coal breakers in anthracite district, each to cost over \$1,000,000 with machinery. New units will replace 44 existing isolated coal breakers and production plants. Company will also electrify majority of mining plants and transportation equipment.

F. G. Vogt & Sons, Inc., Thirtieth and Race Streets, Philadelphia, meat packer, plans installation of refrigerating equipment, conveyors, temperature control and humidity apparatus in new plant, to cost about \$1,000,000. C. B. Comstock, 110 West Fortieth Street, New York, is engineer.

Bendix Brake Service Co., 3912 North Broad Street, Philadelphia, automobile brakes and equipment, is planning call for bids on general contract for two-story and basement, 75 x 175 ft., factory branch, service and repair building, to cost more than \$125,000 with equipment. H. G. Christman, 306 Notre Dame Avenue, South Bend, Ind., is engineer. Company is subsidiary of Bendix Brake Co., South Bend.

W. E. S. Dyer, Land Title Building, Philadelphia, architect and engineer, has been engaged by Fraser Paper Ltd., Mada-



waska, Me., to prepare plans for extensions and improvements in mill, including installation of additional machinery.

Sinclair Refining Co., Gaul and Vernango Streets, Philadelphia, has work under way on expansion program at oil refinery at Trainer, Pa., to include installation of 20 new type stills and other equipment, including storage and distributing facilities, to cost more than \$250,000.

Eugene A. Stopper 10 South Eighteenth Street, Philadelphia, architect, has awarded general contract to Golder Construction Co., 1600 Arch Street, for two-story and basement automobile service, repair and garage building, 55 x 130 ft., at Camden, N. J., to cost \$150,000. It will be occupied under lease by Camden Motor Co., 528 Market Street.

Joint School Board of Sellersville and Perkasie, Pa., plans installation of manual training equipment in new two-story consolidated high school to cost \$160,000, for which bids have been asked on general contract by E. William Martin, duPont Building, Wilmington, Del., architect. Walter Baum, Sellersville, is secretary of joint board.

Spicer Mfg. Corporation, Toledo, Ohio, manufacturer of universal joints, axles and other automotive equipment, has awarded general contract to F. H. Keiser Co., Pottstown, Pa., for addition to Pottstown plant to cost \$300,000, of which more than \$175,000 will be used for equipment.

City Council, York, Pa., is planning establishment of a municipal airport, including hangars, repair and reconditioning shops, oil storage and other buildings. It is proposed to arrange a fund of about \$115,000 for project. Airport committee of York Chamber of Commerce will be active in work.

W. L. Brubaker & Brothers Co., Millersburg, Pa., is erecting one-story addition, 65 x 100 ft. Cincinnati milling machines and Le Blond lathes have been purchased, but other equipment is still to be bought.

## South Atlantic

**B**ALTIMORE, March 11.—Plans are under way by Chad Jones, head of Edward Kirby Shipyard, St. Michaels, Md., for new shipbuilding and repair plant on Woodalls Point, consisting of metal and iron-working shop, wood-working shop and other units. Kirby yard and property has been acquired by H. P. Brown and associates, and operations will be discontinued there.

Curtiss Flying Service, Garden City, L. I., has acquired Chesapeake Aircraft Co., Baltimore, including airport facilities, and will develop property for landing field, with hangars, repair shops, and other structures, including parts distributing plant for company aircraft. Curtiss company also plans establishment of similar units at Norfolk, Va., Palm Beach and Miami, Fla., Louisville and other points.

Port Development Commission, Munsey Building, Baltimore, will install conveying, elevating and other equipment, including factory trucks, in two-story storage and distributing warehouses, for which general contract has been let to Northeastern Construction Co., 6 West Madison Street, to cost \$1,733,000. J. E. Greiner, Lexington Building, is consulting engineer.

Consumers' Utilities Co., Winchester,

Va., is considering construction of artificial gas plant and system at Harrisonburg, Va., to cost about \$200,000 with equipment.

H. J. Otten, 30 West Boulevard, Charlotte, N. C., and associates, have organized Tar Heel Knife & Saw Co. with capital of \$100,000, and plan operation of new plant at High Point, N. C., to manufacture cutlery and kindred specialties.

Central Atlantic States Service Corporation, 40 Goble Street, Newark, N. J., is said to be planning one-story cold storage and refrigerating plant at Waynesboro, Va., to cost about \$200,000 with equipment. A site, 100 x 1100 ft., has been secured.

William W. McElrath, Richmond, Va., engineer, will prepare plans for rayon mill near Danville or Radford, Va., to include power plant, pumping station, machine and repair shop, and other units. Company name is temporarily withheld. Project will cost about \$5,000,000.

Duke Power Co., Charlotte, N. C., has work under way on first unit of steam-operated electric power plant near city, to have capacity of 150,000 hp. and to cost over \$1,000,000. Transmission lines will be extended.

City Council, Lynchburg, Va., has authorized municipal airport on prison farm property on Danville Highway, including hangar, repair shop and other structures. Ultimate project is expected to cost about \$45,000 with equipment.

## Pittsburgh

**P**ITTSBURGH, March 11.—Machine tool dealers are well satisfied with current business and prospects. While no large lists are coming out, there is a constant demand for individual tools. Construction plans of a number of steel companies in this and nearby districts are so extensive as to encourage expectations that machine shop equipment will be replenished and added to. The second quarter machine tool list of the Westinghouse Electric & Mfg. Co. is expected to reach the trade in the next fortnight.

Electropure Sales Corporation, East End Trust Building, Pittsburgh, manufacturer of electrical products, has asked bids on general contract for two-story factory, 35 x 50 ft., to cost about \$30,000 with equipment. Braziell & Anderson, 309 Fourth Avenue, are architects.

North American Refractories Co., Curwensville, Pa., recently organized to take over Crescent Refractories Co., with local plant and other interests, is disposing of bond issue, part of fund to be used for consolidation and for proposed expansion. Company will operate total of 15 plants.

West Penn Power Co., West Penn Building, Pittsburgh, is negotiating for purchase of municipal electric light and power plant and system at Emporium, Pa., and plans expansion in that district, including transmission line construction.

William B. Hinkel, R. F. D. No. 7, Bellevue, Pa., and associates, have organized Pittsburgh Stoker Co., and plan new plant at Pittsburgh to manufacture stoker and other combustion equipment, including repair and service division. Fred C. Hinkel, Jr., address noted, will be an official of new company.

Pittsburgh Gray Iron Foundry Co., South and Walker Streets, Pittsburgh, is completing plans for one-story addition,

35 x 150 ft., to cost about \$70,000 with equipment. Hunting, Davis & Dunnells, Century Building, are architects and engineers.

Seward Wire Co., Camden Avenue, Parkersburg, W. Va., has awarded general contract to Plate Construction Co., Jeannette Street, for one-story unit at South Parkersburg, totaling about 16,000 sq. ft. floor space, to cost about \$40,000 with equipment.

United Engineering & Foundry Co., Farmers' Bank Building, Pittsburgh, manufacturer of rolling mill machinery, has removed foundry department from local Frank Kneeland Works to plant at Youngstown, in connection with foundry expansion program at latter point.

## Chicago

**C**HICAGO, March 11.—Sales of machine tools, although in small lots, are numerous and more scattered over the Mid-Western territory. Jobbing shops are busy and in need of equipment. Changes in automobile models are leading to sizable purchases with the probability of larger lists to come. The Kissel Motor Car Co., Clintonville, Wis., is buying machine tools for the manufacture of taxicabs. Although farm implement manufacturers have purchased the bulk of their needs, nevertheless miscellaneous orders from this source are attractive in total volume. Allis-Chalmers Mfg. Co., Milwaukee, is buying against a sizable list for light tractor production.

Prices for used machine tools are high and few good machines are available. This market is temporarily relieved by the sale of a large number of used tools by a mining machinery manufacturer. It is probable that the equipment of the Velie Motor Car Co., Moline, Ill., will soon be offered for sale.

Keystone Steel & Wire Co., Peoria, Ill., is planning an expansion program which includes new power plant, factory extensions, office building and a warehouse.

Stocker-Rumely-Wachs Co., 117 North Jefferson Street, Chicago, has been appointed Chicago district sales agent for grinders and buffers manufactured by United States Electrical Mfg. Co., Los Angeles.

Chicago-Jefferson Fuse & Electric Co., 1500 South Laflin Street, Chicago, has changed name to Jefferson Electric Co.

Contract has been let by Independent Pneumatic Tool Co., 600 West Jackson Boulevard, Chicago, to Olson Brothers, Aurora, Ill., for two-story addition, 120 x 185 ft., to plant at Aurora, to cost about \$150,000 with equipment. Patterson & Davidson, 53 West Jackson Boulevard, Chicago, are architects and engineers.

Evans Fibre Box Co., 3301 West Forty-seventh Place, Chicago, has asked bids on general contract for one-story addition, to cost close to \$100,000 with machinery. A. Epstein, 2001 West Pershing Road, is architect and engineer.

Wallace Aircraft Corporation, 4710 Irving Park Boulevard, Chicago, is considering new one-story plant at Rockford, Ill., for parts production and assembling, 80 x 210 ft., to cost about \$80,000 with equipment.

Cellosilk Mfg. Co., 410 Sullivan Street, Chicago, manufacturer of transparent wrapping materials, has acquired former plant of American Malleable Iron Co., Barrington, Ill., consisting of one and

two-story buildings, 200 x 400 ft., and 40 x 110 ft., and will remodel for new plant.

City Council, Ottumwa, Iowa, has plans for hydroelectric power plant and transmission system to cost \$750,000. John Brady, City Hall, is city engineer. Brown & Cook, 106 North Market Street, are consulting engineers.

American Electric Fusion Corporation, 2610 Diversey Avenue, Chicago, has plans for two-story addition to welding works, to cost about \$20,000 with equipment.

Northern Pacific Railway Co., St. Paul, Minn., has work under way on new steel car construction and repair shops at Laurel, Mont., to cost about \$100,000 with equipment.

Department of Parks and Improvements, City Hall, Denver, C. D. Vall, manager, has begun construction of hangar, 120 x 120 ft., at airport on Thirty-second Avenue, with lean-to, 24 x 120 ft., for machine and repair shop, to cost about \$50,000. Herbert S. Crocker, Tramway Building, is consulting engineer.

Commonwealth Edison Co., 72 West Adams Street, Chicago, has authorized fund of \$19,634,000 for extensions and improvements in steam-operated electric generating plants, transmission lines, substations, etc.

Williams Oil-O-Matic Heating Corporation, Bloomington, Ill., manufacturer of oil burning equipment, has awarded general contract to J. L. Simmons Co., Inc., Bloomington, for two one-story additions, 100 x 200 ft., and 125 x 300 ft., to cost over \$125,000 with equipment.

Manning, Maxwell & Moore, Inc., 27 North Jefferson Street, Chicago, has been appointed agent in Illinois, Iowa and Indiana for production lathes manufactured by Porter-Cable Machine Co., Syracuse, N. Y.

## Cleveland

CLEVELAND, March 11.—While machine tool business with dealers was good the past week, the volume was not as large as during the previous week, when several fair lots were placed. Business also continues good with manufacturers. Orders placed the past week include 20 turret lathes purchased from a Cleveland manufacturer for shipment to Soviet Russia. Orders with local dealers during the week were confined for the most part to single machines, and these were fairly numerous. The volume of inquiry is holding up well.

Plans are under way by Fox Furnace Co., 206 Washington Avenue, Elyria, Ohio, manufacturer of furnaces, radiators, etc., subsidiary of American Radiator Co., New York, for one-story addition, 100 x 120 ft., to cost over \$75,000 with equipment. George S. Rider Co., Century Building, Cleveland, is architect and engineer.

Paragon Refining Co., Toledo, Ohio, is planning addition to oil refinery to increase capacity 50 per cent, including improvements in present units, to cost about \$1,000,000 with equipment.

Akron Air Service, Inc., 975 East Market Street, Akron, Ohio, George W. Merz, president, is planning construction of hangar at Fulton Field, with shop and repair facilities, to cost about \$40,000. Charles W. Frank, Akron Savings & Loan Building, is architect.

White Motor Co., 842 East Seventy-ninth Street, Cleveland, is planning two and three-story service, repair and sales

building, to cost about \$180,000 with equipment.

Cleveland Institute of Aviation, Inc., Cleveland, Arthur H. Clark, president, is arranging for lease of property at municipal airport, in connection with development of a flying school, and will have plans drawn for hangar, with shop and repair facilities, to cost about \$100,000 with equipment.

Carnegie Body & Top Co., 6115 Carnegie Avenue, Cleveland, manufacturer of automobile bodies, tops, etc., has asked bids on general contract for one-story addition, 100 x 155 ft., to cost about \$60,000 with equipment. J. F. Steffens, Fidelity Building, is architect.

## Cincinnati

CINCINNATI, March 11.—There has been no abatement in the demand for machine tools, sales this month having been sustained at or near the high mark of February. Several large builders report bookings to date this year more than double those in the same period last year, and approximately four times those in 1926. At least three important machine tool manufacturers declare that business in January and in February was comparable to that in the best months during the war. Orders are not coming from any one source, but are well distributed among all industries. One of the largest sales of the week consisted of about \$50,000 worth of special lathes for a tractor maker. Substantial orders continue to be placed by automobile companies and automobile parts manufacturers.

Inquiries are heavy and give promise of excellent business this month. Production in almost all local machine tool plants has been stepped up to capacity, and even the small shops which have been comparatively inactive for a long time are feeling the stimulating effects of the overflow from the larger companies. The only factor limiting further expansion of the volume of sales is the matter of deliveries. Some users are refraining from buying because they cannot get the tools they want until June. Most builders cannot promise shipment of machines until May, and in some cases the time is stretched 30 days longer.

Work will soon begin by Highland Body Mfg. Co., Elmwood Place, Cincinnati, manufacturer of automobile bodies, for addition to cost more than \$65,000 with equipment. Austin Co. is architect and contractor.

Kentucky & West Virginia Power Co., Hazard, Ky., is planning extension and improvement program to cost about \$2,000,000, including addition to power plant at Lothair, to cost about \$500,000 with machinery; new power station in vicinity of Betsy Lane on Big Sandy River; new power transmission lines and substations. Facilities will be used largely for service for coal mining properties and work will include equipment for that purpose.

Citizens' Ice & Fuel Co., Williamsburg, Ky., has plans for new ice-manufacturing and car-icing plant at Corbin, Ky., to cost about \$100,000 with equipment.

City Commission, Russell P. Price, city manager, Middletown, Ohio, is completing plans for third unit at municipal electric light and power plant, to cost about \$275,000 with equipment. Froehlich & Emery, Toledo, Ohio, are engineers.

Cincinnati Sheet Metal & Roofing Co., 1226 East Front Street, Cincinnati, has

awarded general contract to William Lang & Sons Co., 3280 Beekman Street, for addition and improvements in present factory, to cost \$70,000 with equipment. Howard McClorey, Bank of Commerce Building, is architect.

Franklin Carriage Co., South Market Street, Jackson, Tenn., has asked bids for one-story addition, 95 x 115 ft., to carriage and automobile body works, to cost about \$22,000 with equipment.

Consolidated Mfg. Co., North Canal Street, Dayton, Ohio, manufacturer of metal stampings, aluminum cooking utensils, etc., is considering one-story addition, 100 x 300 ft., to cost about \$85,000 with equipment.

National Cash Register Co., Dayton, Ohio, has asked bids on general contract for six-story and basement addition, to cost over \$600,000 with equipment.

Consolidated Coach Corporation, Lexington, Ky., is having plans completed for two-story machine and repair shop, with service and garage facilities, 125 x 150 ft., to cost more than \$140,000 with equipment. Frankel & Curtis, Lexington, are architects.

## St. Louis

ST. LOUIS, March 11.—Plans are being considered by Guardian Aircraft Corporation, 2500 Texas Avenue, St. Louis, for new one-story plant, 100 x 450 ft., for parts manufacture and assembling, including iron and metal-working, wood-working and other departments, to cost \$200,000 with equipment. Derek White is president.

City Council, Columbia, Mo., is asking bids until April 3 for extensions and improvements in municipal electric light and power plant, including 5000 kva., turbo-generator unit, condenser, switchboard and auxiliary equipment. Burns & McDonnell Engineering Co., Interstate Building, Kansas City, Mo., is engineer.

Producers' Oil Co., Bristow, Okla., C. H. Fox, superintendent, will soon begin construction of new refinery near city limits, to cost \$100,000.

Stewart Sand Co., City Bank Building, Kansas City, Mo., has arranged for construction of new storage and distributing plant at North Kansas City, 65 x 80 ft., to cost about \$40,000 with handling, loading and other equipment.

Mississippi River Fuel Co., 506 North Fourth Street, St. Louis, has purchased 25-acre tract at Fredericktown, Mo., and is reported planning pumping plant to cost more than \$35,000 with equipment.

Lincoln Aircraft Corporation, Lincoln, Neb., has secured manufacturing and sales rights from Wright Aeronautical Corporation, Paterson, N. J., for Wright-Morehouse air-cooled airplane engine, Wright company retaining European rights, and will arrange for production at local plant, using engine in connection with manufacture of light commercial aircraft.

Sinclair Refining Co., Cushing, Okla., has awarded contract to Hope Engineering Co., Mount Vernon, Ohio, for construction of pipe line from Drumright, Okla., to Joliet, Ill., about 360 miles, to cost more than \$1,500,000.

Jansen-Jenkins, Inc., Tulsa, Okla., has been formed with capital of \$200,000 to take over and expand Jansen Mfg. Co., with plant at 121 West First Street, manufacturer of restaurant equipment, etc. New company is planning erection



of three-story factory, 80 x 110 ft., to cost more than \$75,000 with equipment.

Hudson Ramp Auto Co., Oklahoma City, Okla., has awarded general contract to Charles M. Dunning Construction Co., 420 North Hudson Street, for eight-story and basement service, repair and garage building, 76 x 150 ft., to cost about \$270,000 with equipment.

Shell Oil Co., Shell Building, St. Louis, has plans for storage and distributing plant at Springfield, Mo., to cost about \$40,000 with equipment. F. E. Evans, address noted, is company architect and construction superintendent.

Superior Stoker Corporation, 4204 North Union Boulevard, St. Louis, has been organized to manufacture automatic coal burning equipment. At present product is manufactured by Bridge & Beach Mfg. Co., St. Louis, which is in charge of raw material purchases. John B. Marquis is president of Superior company.

Eagle Mfg. Co., St. Louis, manufacturer of laundry and drying equipment, has been reorganized as Eagle Laundry Machinery Co. It occupies four-story building at 111 South Second Street, fully equipped. Company will be in market for additional equipment from time to time.

## Buffalo

**B**UFFALO, March 11.—Plans are being arranged by Century Rotary Motor Corporation, Canastota, N. Y., manufacturer of aircraft motors, for additions and installation of new equipment. Company is planning sale of block of 10,000 shares of stock, portion of fund to be used for work.

Board of Education, Gowanda, N. Y., is considering installation of manual training equipment in three-story high school, to cost \$250,000, for which bids have been asked on general contract. Edward Green & Sons & Albert H. Hopkins, 1 Niagara Square, Buffalo, are architects.

duPont Cellophane Co., River Road, Buffalo, manufacturer of transparent wrapping materials, has purchased plant and business of Capes-Viscose, Inc., Delawanna, N. J., manufacturer of bottle caps, etc., and will consolidate. It is proposed to continue factory at present location and increase capacity.

Utility Metal Products Co., Buffalo, has been organized by Maurice J. Rumizon, 5 Fairchild Place, and associates, with capital of \$60,000, and plans operation of plant to manufacture metal building specialties, hardware supplies and kindred products.

General Cable Corporation, 420 Lexington Avenue, New York, has begun transfer of plant unit at Newark, N. J., devoted to production of magnetic copper wire coils, etc., to Rome, N. Y., where manufacture in this line will be concentrated and expansion carried out.

St. Regis Paper Co., Watertown, N. Y., has acquired controlling interest in Bates Valve Bag Corporation, 8200 South Chicago Avenue, Chicago, manufacturer of paper bag filling machinery, etc., and will operate as unit. Acquired company maintains several plants in different sections of country.

## Detroit

**D**ETROIT, March 11.—Contract has been let by Burroughs Adding Machine Co., Detroit, to Corrick Brothers, Owen Building, for one-story addition, 60 x 175 ft., to cost about \$50,000 with equipment. Albert Kahn, Marquette Building, Detroit, is architect and engineer.

Detroit Alloy Steel Co., Detroit, recently formed by Hugh Martin, head of Detroit Gray Iron Foundry Co., 6403 Wight Street, has established plant at foot of Iron Street to manufacture alloy steel products, die castings, etc. Harry H. Wyatt is secretary and treasurer.

Consolidated Paper Co., East Elm Street, Monroe, Mich., has awarded general contract to W. H. Knapp Co., Dixie Highway, for one-story addition to cost about \$200,000 with equipment. New unit will be used largely for storage and distribution. Foster, Wernert & Taylor, Nicholas Building, Toledo, Ohio, are architects.

Fisher Body Corporation, General Motors Building, Detroit, has taken over 16-acre tract near city limits, Seattle, and plans construction of new plant, with initial unit totaling 150,000 sq. ft. floor space, for production of wood parts for automobile body manufacture, to cost more than \$500,000 with machinery.

Champion Porcelain Co., 8525 Butler Street, Detroit, manufacturer of spark plugs, etc., subsidiary of AC Spark Plug Co., Flint, Mich., has authorized an expansion program to cost about \$250,000, to double present plant capacity. Work will include new tunnel kiln, kiln cars, etc.

Melling Forging Co., Lansing, Mich., manufacturer of iron and steel forgings, has arranged for increase in capital from \$100,000 to \$300,000, part of fund to be used for expansion.

Hupp Motor Car Co., 3641 East Milwaukee Avenue, Detroit, has awarded general contract to Everett Winters Co., 1651 East Grand Boulevard, for two one-story additions and metal stamping plant, 50 x 500 ft., to cost about \$215,000 with equipment. Company will also expand plant of Cleveland-Chandler Co., Cleveland, for production of new six-cylinder automobile. Equipment installation is reported to cost about \$2,000,000.

Shaw-Walker Co., Muskegon, Mich., manufacturer of metal office furniture, plans one-story addition, to cost about \$160,000 with equipment. New unit will be used largely for production of metal desks.

Maring Wire Co., Muskegon, Mich., manufacturer of fine wire products, is arranging an expansion program, to cost about \$140,000 with equipment.

Michigan Valve & Foundry Co., P. O. Box 822, Detroit, maker of appurtenances for waterworks systems, filtration and sewage plants, has been purchased by Chicago and Detroit banking interests and new company has been formed to carry on business. R. J. Goldie, vice-president and general manager, will be in charge. W. F. Rockwell is president and chairman, and E. S. Jackson, secretary-treasurer.

Constant Stoker Co., Midland, Mich., has been organized to manufacture stoking devices. At present company is en-

gaged in assembling only and is in market for motors and gear reduction parts, and occasionally for self-aligning ball-bearings.

## Milwaukee

**M**ILWAUKEE, March 11.—Machine-tool buying continues at a high rate, with the broad diversification of sources that has characterized business for several months. Local industry has reached another new all-time peak in employment with a gain of 1400 during the past month. Skilled machine shop workers are scarce, but the labor turnover is relatively light.

Chicago, Milwaukee, St. Paul & Pacific Railway, Chicago, will take bids about March 27 for construction of a car repair shop extension, 200 x 1000 ft., at the West Milwaukee shops. C. N. Bainbridge is engineer of design, and C. F. Loweth is chief engineer.

Glove Wire & Iron Works, 1009 Atkinson Avenue, Milwaukee, has acquired three acres on Capitol Drive, for a new plant. Work may begin about middle of year. Products are elevator cabs and enclosures, bank and office fixtures, ornamental metal work, etc. Gustave A. Trepte is president and treasurer.

Maynard Electric Steel Casting Co., 1336 Twenty-second Avenue, Milwaukee, has started work on a shop addition, 120 x 600 ft., to cost \$200,000 with equipment. Frank J. Wabiszewski is general manager.

Pioneer Mfg. Co., 726 Seventh-fourth Avenue, West Allis, is building a shop extension costing about \$30,000.

Turner Steel Co., 192 Fourth Street, Milwaukee, is taking bids for a three-story garage and warehouse, 150 x 180 ft., to be erected for an unnamed owner, to cost \$200,000.

Layton Park Motor Co., 1009 Lincoln Avenue, Milwaukee, has plans by Davis & Tuckwell, engineers, 377 National Avenue, for a two-story service and repair shop wing, 69 x 126 ft.

American Black Granite Co., Minneapolis, has placed general contract with Tomlinson & Egan, Ashland, Wis., for remodeling former blast furnace plant, of Charcoal Iron Co. of America, at Ashland, into a polishing and finishing plant, with new shipping dock. Architect is F. E. Johnson, Wisconsin Block, Superior, Wis. Work and equipment will cost about \$350,000. A. E. Appleyard is president.

Merger of Evinrude Motor Co. and Elto Outboard Motor Co., both of Milwaukee, and Lockwood Motor Co., Jackson, Mich., all manufacturing outboard marine engines, in a \$4,000,000 company to be known as Outboard Motors Corporation, with headquarters in Milwaukee, has been announced. Stephen F. Briggs, president Briggs & Stratton Corporation, Milwaukee, owner of Evinrude company, will be chairman of board of directors. Ole Evinrude, head of Elto company, and founder of the outboard motor industry, will be president; Arthur Lockwood, president of Jackson company, will be treasurer. Charles L. Coughlin, president of Evinrude, and Jacob Stern, assistant general manager of Elto, will be vice-president, and John L. Brown, of J. D. Currie & Co., Detroit, secretary.

## Gulf States

**B**IRMINGHAM, March 11.—Plans have been approved by Standard Oil Co. of Louisiana, 2134 St. Charles Avenue, New Orleans, for first unit of new refinery at Baton Rouge, La., to cost \$500,000 with fractionating stills, absorption equipment, storage and distributing facilities. Ultimate project will cost more than \$10,000,000.

National Portland Cement Co., Dallas, Tex., has plans for one-story mill at Houston, Tex., for production of fine white cements, to cost about \$140,000.

Texas Electric Service Co., Odessa, Tex., is planning to rebuild equipment storage and distributing plant destroyed by fire, Feb. 26.

Midland Refining Co., Midland, Tex., has begun an expansion program at local oil refinery to increase capacity about 30 per cent. Project will cost more than \$40,000.

Peden Iron & Steel Co., 700 North San Jacinto Street, Houston, Tex., has awarded general contract to C. W. Ennis, 1401 Dowling Street, for one-story addition, 70 x 85 ft., for storage and distribution. A. C. Flinn, Bankers Mortgage Building, is architect.

Southern Cement Co., American Traders' Building, Birmingham, has awarded general contract to Burrell Engineering & Construction Co., 513 West Jackson Boulevard, Chicago, for addition to mill, 50 x 100 ft., to cost over \$90,000 with equipment.

N. W. Overstreet, Mississippi Fire Insurance Building, Jackson, Miss., architect, has completed plans for four-story automobile service, repair and garage building, to cost about \$100,000 with equipment.

Southern Pine Lumber Co., Texarkana, Tex., has plans for new mill near Clarksville, Tex., including power house, machine shop and other units, to cost over \$100,000 with equipment.

Humble Pipe Line Co., operated by Humble Oil & Refining Co., Houston, Tex., has taken over property in southwestern part of Runnels County as site for new pressure station for pipe line, to cost more than \$75,000 with equipment.

B. F. Goodrich Co., Akron, Ohio, has asked bids on general contract for one- and one-half-story factory branch and distributing plant, 105 x 105 ft., at Jack-

sonville, Fla., to cost over \$100,000 with equipment. Carlos B. Schoeppl, Consolidated Building, is architect.

United Gas Co., Houston, Tex., operating Houston Gulf Gas Co., Houston, Tex., and other natural gas properties, has plans for construction of new pipe line from natural gas fields at Refugio to San Antonio and Austin, Tex., about 110 miles, to cost more than \$3,000,000 with booster stations and equipment.

Wyatt Metal & Boiler Works, West Dallas, Tex., has arranged for a bond issue of \$250,000, part of proceeds to be used for expansion.

Conical Roller Cattle Guards Corporation, Anniston, Ala., has been organized to manufacture railroad cattle guards. Plant has been built and equipment installed, but company will be in market from time to time for 3 x 4 x 1/4-in. angle iron. E. Y. Dishman is secretary-treasurer.

## Indiana

**I**NDIANAPOLIS, March 11.—Continental Steel Corporation, Kokomo, will erect one-story addition to cost over \$300,000 with equipment. It is scheduled for completion in about six months. Henry Roemer is president.

Absolute Con-Tac-Tor Corporation, 102 North Main Street, Elkhart, manufacturer of automatic electric controls, switches, etc., has awarded general contract to H. G. Christman Co., 306 South Notre Dame Avenue, South Bend, for one-story addition, 180 x 245 ft., to cost about \$80,000 with equipment. Frank D. Chase, 720 North Michigan Avenue, Chicago, is architect and engineer.

Electric Sprayit Co., Stephenson Building, South Bend, manufacturer of spraying equipment, has engaged William E. Pett, Associates Building, architect, to prepare plans for one-story addition, to cost about \$45,000 with equipment.

Dudlo Mfg. Co., Wall Street, Fort Wayne, manufacturer of wire and cables, a division of General Cable Co., New York, has taken bids on general contract for a new four-story addition for storage and distribution, to cost about \$170,000 with equipment. C. R. McAnlis, Central Building, is architect.

Board of Education, East Chicago, is said to be planning installation of manual training equipment in two-story and basement addition at Roosevelt High School,

to cost \$190,000, for which bids will soon be asked on general contract. Karl D. Norris, Calumet Building, is architect.

Eagle Machine Co., 24 North Noble Street, Indianapolis, has awarded general contract to William E. VanLandingham, Lemcke Building, for one-story machine shop addition, 40 x 60 ft., to cost about \$20,000 with equipment.

## Pacific Coast

**S**AN FRANCISCO, March 7.—Work has begun by Peerless Iron Works, Second and O Streets, Sacramento, Cal., on new plant at West Sacramento, consisting of machine shop, 56 x 100 ft., foundry, 52 x 65 ft., and pattern shop, 30 x 40 ft., to cost about \$30,000 with equipment. Present plant will be removed to new location.

Pacific Gas & Electric Co., 245 Market Street, San Francisco, has secured permission for hydroelectric power development on North Fork of Mokelumne River in Amador and Calaveras Counties, to develop capacity of 134,000 kw. Project will include steel tower transmission line to Newark and other points in Alameda County and will cost \$35,000,000.

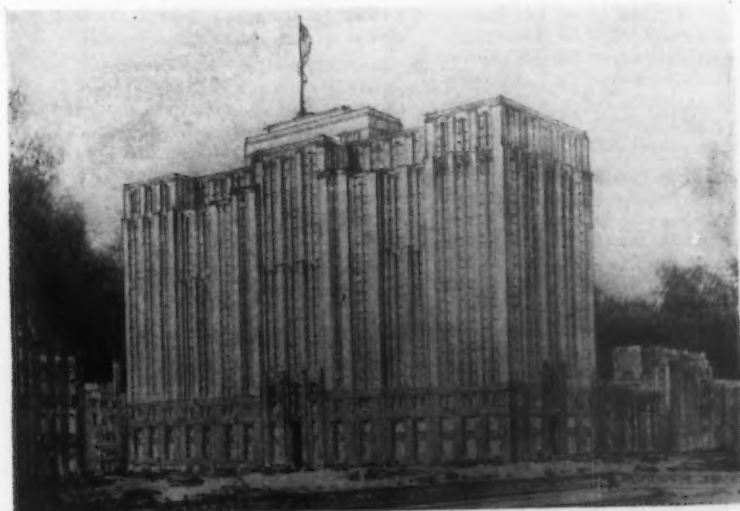
H. L. Gogerty, Guaranty Building, Los Angeles, architect, has plans for a hangar, 200 x 240 ft., at Glendale, with machine and repair shop facilities, to cost \$45,000 with equipment.

Boiler, Tank & Pipe Co., 4061 Piedmont Street, East Oakland, Cal., will proceed with erection of new plant on 3-acre tract, to cost about \$65,000 with equipment. A crane runway, 60 x 350 ft., will be constructed.

Pacific Public Service Co., Russ Building, San Francisco, operating Coast Counties Gas & Electric Co., same address, and other electric light and power properties, has disposed of block of 43,000 shares of common stock, part of fund to be used for extensions and improvements.

Pacific Coast Forge Co., 3800 Aloha Street, Seattle, has awarded general contract to Peter Gjarde, Lyon Building, for one-story addition, 50 x 60 ft., to cost about \$18,000.

Portland Electric Power Co., Electric Building, Portland, is planning one-story equipment storage and distributing plant at Hillsboro, Ore., with repair facilities, to cost \$55,000 with equipment.



### Machinery and Equipment Building Planned for Chicago

**C**HICAGO is to have its own machinery and equipment mart, a 16-story building affording more than 500,000 sq. ft. of floor space, to be erected on Monroe Street between Canal and Clinton Streets. The building is planned for the housing of sales offices and display rooms for companies manufacturing machinery and equipment of all types. The site for the building is in the district in which most of the machine tool dealers in Chicago now have their offices and salesrooms. A special exhibit hall, with seating capacity for 750 when used as an auditorium, is one feature of the proposed building, while another is a garage with facilities for storage of 300 automobiles. Warehouse space will be provided in the basement and in an adjoining building. Exhibit spaces will have plate glass partitions on the corridor side so that the machinery on display will be visible to all passers-by.



United States Electrical Mfg. Co., 200 East Slauson Avenue, Los Angeles, has awarded general contract to William P. Neil Co., 4814 Loma Vista Avenue, for one-story addition, 30 x 220 ft., to cost about \$40,000 with equipment. Hamm, Grant & Bruner, Inc., Ferguson Building, is architect and engineer.

Board of Education, city and county of San Francisco, plans installation of six machine shops for vocational instruction in addition to Francisco Junior High School, entire project to cost about \$400,000. S. Helman, 57 Post Street, is architect; Coddington & Duncan, 222 Kearny Street, are mechanical engineers.

Enterprise Foundry Co., 320 Fremont Street, San Francisco, is considering rebuilding part of plant recently destroyed by fire.

Consolidated Hardware Manufacturers, Inc., 312 North Santa Anita Avenue, Pasadena, Cal., has been formed as successor to B. & P. Hardware Mfg. Co., to manufacture door locks and builders' hardware. Company will build plant and will be in market for materials and equipment. J. G. Woods is president.

## Canada

**T**ORONTO, March 11.—While a large part of current demand is for single tools for replacement, buying for new works is in good volume. Dealers and builders are figuring on some fair sized lists on which specifications have been asked for delivery within the next two or three months. Demand is well distributed and covers all classes of industrial development.

Bids are being received by William H. Wardwell, engineer, 1463 Union Street, Montreal, for cold storage plant at Moncton, N. B., to cost \$200,000 for Moncton Cold & General Storage Co., Ltd. Equipment will be purchased later.

J. A. Chalifoux, 1071 St. Lawrence Boulevard, Montreal, Que., will build a new factory to cost \$15,000, one story, 45 x 55 ft.

Shawinigan Water & Power Co., 83 Craig Street West, Montreal, has purchased a site at Three Rivers, Que., on which it will erect a \$6,000,000 artificial silk plant.

Frid Construction Co., Ltd., Clyde Block, Hamilton, Ont., has been awarded contract for a \$40,000 addition to plant of Canadian Drawn Steel Co., Ltd., Gerard Street. Stewart McPhie, Sun Life Building, Hamilton, is architect.

E. Monette, 76 Fairmount Avenue, Ottawa, Ont., has been awarded contract for a \$100,000 manufacturing plant at St. Penfleur and Montclair Streets, Hull, Que., for the Hull Match Co., Ltd. Architects are Richards & Abra, 55 Metcalf Street, Ottawa.

E. G. M. Cape & Co., Cathcart Street, Montreal, have contract for excavation, piling and foundations for addition to plant of Northern Electric Co., Ltd., Richmond and Richardson Streets, Montreal. Bids will be called next month for superstructure. J. A. Despatie is architect.

Curtiss Reid Aircraft Co., 347 Craig Street West, Montreal, has let contract to C. E. Deakin, 698 St. Catharine Street West, for a one and two-story airplane manufacturing plant at St. Laurent, Que., to cost \$160,000. B. G. De Hueck, 912

New Birks Building, Montreal, is architect.

Allan & Earl, Ltd., Equity Building, Windsor, Ont., general contractors, have let a number of sub-trades for addition for the Dominion Forge & Stamping Co., Walker Road, Walkerville, Ont. Building will be one story, 90 x 120 ft., and cost \$90,000.

Canadian Pacific Railway Co. is planning expenditure of \$2,000,000 in Algoma, Ont., district, which will include a roundhouse at Sudbury, Ont.; improvements and additions to North Bay shops, and laying of 70 to 120 miles of 100 lb. rails.

Arthur Jackson Machine Tool Co., Toronto, Montreal, and Vancouver, Canada, has recently opened an office at 303 Heintzman Building, Ouellette Street, Windsor, Ont., under management of Harry Dobson. Company is Canadian representative for number of leading United States and British machine tool makers.

### Western Canada

Winnipeg Brass, Ltd., Portage at Clifton Street, Winnipeg, is erecting addition, 50 x 300 ft., to cost \$50,000. In THE IRON AGE of Jan. 10, location of this company was incorrectly given as at Flora and Robinson Streets, and thus confused with Winnipeg Foundry Co., at that address. Winnipeg Brass, Ltd. will install equipment for fabrication of brass products, including casting, machining and finishing, and will carry stocks of brass, copper, aluminum, nickel, silver and other non-ferrous products. A. Burton is president and general manager.

City engineer's department, Winnipeg, is preparing plans for a waterworks pumping station to cost about \$66,000.

British Columbia Electric Power & Light Co., Victoria, B. C., has let contract to Parfitt Brothers, Ltd., 1303 Gladstone Avenue, for a power plant to cost \$40,000.

Cope & Sons, Ltd., 150 Hastings Street West, Vancouver, B. C., has awarded contract to Dominion Construction Co., 509 Richard Street, for a factory and office building, to cost about \$100,000.

Richfield Oil Co., Ltd., False Creek, Vancouver, B. C., is having plans prepared by J. W. Freak, for oil storage plant to cost \$100,000.

## Foreign

**B** RITISH subsidiary of Kolster Radio Corporation, 200 Mount Pleasant Avenue, Newark, N. J., has acquired Brandes, Ltd., London, manufacturer of similar equipment, and new company has been formed with capital of £1,300,000, under name of Kolster-Brandes, Ltd. Arrangements are being made for a stock issue to total about \$1,750,000, part of proceeds to be used for expansion.

Construction has been authorized of an electric railroad line in Republic of San Marino, Italy, about 20 miles. Work will be carried out by an Italian company, and it is scheduled for completion in 24 months. Project will include power facilities, track construction, 10 tunnels, rolling stock, repair and reconditioning shop, etc. Information, including name of company, at office of Bureau of Foreign and Domestic Commerce, Washington, reference Italy No. 299918.

Ford Motor Co. of Belgium, Brussels, affiliated with Ford Motor Co., Detroit, has arranged for increase in capital to 100,000,000 Belgian fr., and is planning stock issue of about 40,000,000 Belgian

fr., part of proceeds to be used for expansion.

General manager, Railway Head Office, Wellington, New Zealand, will receive bids until May 8 for one drop forge hammer, four punching and shearing machines, one single-end punching machine, two gate shearing machines and other machine tools, pumping machinery, oil storage tanks and accessories, as per specifications on file.

Soviet Russian Government, Moscow, has authorized construction of an automobile manufacturing plant, including parts and assembling departments, with rated capacity of 100,000 cars per annum. Amtorg Trading Corporation, 165 Broadway, New York, is official buying agency for Soviet Russian Government in United States. In addition to this project, last-noted organization is said to have large orders on hand for mechanical, electrical and other equipment and supplies for current projects, and for which contracts will be placed soon.

## New Trade Publications

**Refining Slag for Malleable Iron.**—Mathieson Alkali Works, New York. Bulletin 286 describes use of Purite (fused sodium carbonate) for reducing sulphur in the molten metal in an air furnace.

**Making and Treating Die Blocks.**—Firth-Sterling Steel Co., McKeesport, Pa. Pamphlet on the heat treatment of "chromovan triple die steel," a patented high-carbon high-chromium steel for stamping and pressing dies requiring extra hardness and resistance to abrasion.

**Steel Castings.**—Lebanon Steel Foundry, Lebanon, Pa. A four-page pamphlet entitled, "Where a Breakdown Would Lose a Fortune," describes some of the electric steel castings produced by that company as used in the hazardous oil fields.

**Nickel Alloy Steels.**—International Nickel Co., Inc., New York. A well-illustrated 12-page leaflet entitled Curtiss "D-12" and "Conqueror" Engines, discusses in detail the extent to which nickel alloy steels are used in the manufacture of these engines.

**Manganese Steels and Fahralloy.**—American Manganese Steel Co., Chicago. A four-page pamphlet discusses new applications and unusual uses for Amsco manganese steel and fahralloy. It is copiously illustrated. Two other two-page leaflets describe the company's solid manganese steel page type dragline buckets and the improved Kranz manganese steel beater bed plate.

**Heat-Treating Furnaces.**—American Gas Furnace Co., Elizabeth, N. J. A 16-page leaflet contains the reprint of an article entitled "Furnaces for Various Heat Treatments" by P. C. Osterman and E. C. Cook. This appeared originally in *Heat Treating and Forging*, July, August and September, 1928.

**Diamond Drill Equipment.**—Sullivan Machinery Co., 122 South Michigan Avenue, Chicago. New catalog No. 85-B, in which complete equipment and supplies for use with Sullivan diamond core drills are listed and illustrated. This is a 56-page book, 8½ x 11 in., containing complete data for ordering everything from black diamonds to drill rods, safety clamps, water swivels, core barrels of numerous types, fish tail bits for soft ground drilling.

